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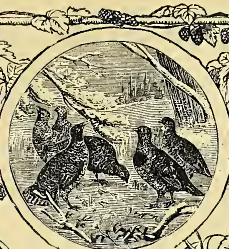

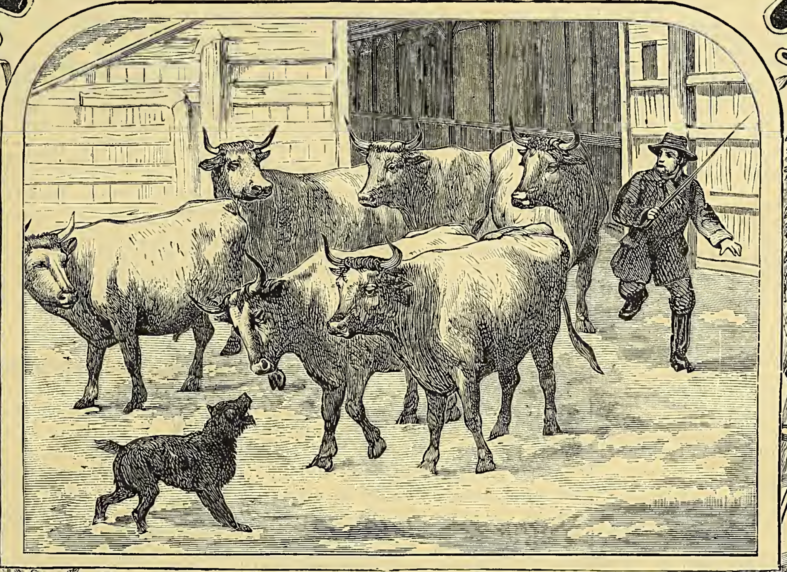

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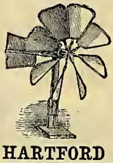

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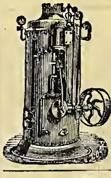

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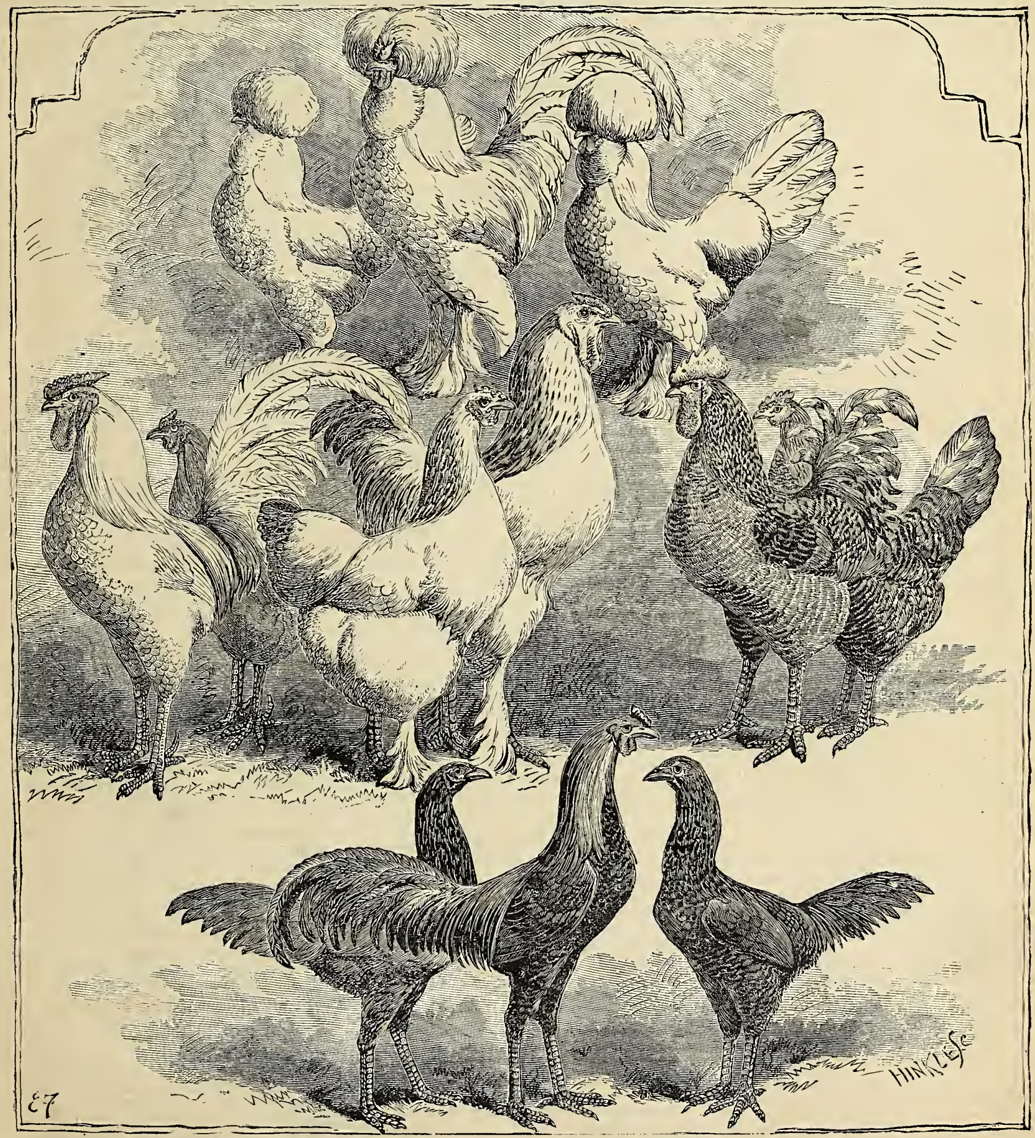

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New South Wales.—We have received a small pamphlet on New South Wales, its progress and resources, published by authority of the Commissioners to the Centennial Exhibition at Philadelphia. The pamphlet gives a description of the country, which is the eastern part of Australia, and of which Sydney is the chief town and port; also of its industries, productions, climate, and resources. As the country has some features in common with our own great pastoral regions in the West, the methods there in use of disposing of and utilizing the immense tracts of public pasture lands, are interesting to us. One hundred and fifty millions of acres of natural pastures are leased at about one cent per acre yearly, and $200,000,000 are invested in flocks and herds. To divide up our western plains into 640 acre tracts, and offer only 160 acres to a purchaser, is simply prohibitory of their settlement, and throws vast tracts into the hands of squatters, without benefit to the public. Possibly the Australian method might suggest a plan for the definite settlement of our vast pastoral regions.

Calendar for January.

Day of Month.	Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.*			*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.*			*Washington, Maryland, Virginia, Kentucky, Missouri, and California.*		
		Sun rises	*Sun sets.*	*Mo'n rises.*	*Sun rises.*	*Sun sets.*	*Mo'n rises.*	*Sun rises.*	*Sun sets.*	*Mo'n rises.*
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	M	7 30	4 38	6 57	7 25	4 44	7 1	7 19	4 49	7 6
2	T	7 30	4 40	8 18	7 25	4 45	8 21	7 19	4 50	8 24
3	W	7 30	4 40	9 35	7 25	4 45	9 38	7 19	4 51	9 39
4	T	7 30	4 41	10 49	7 25	4 46	10 49	7 19	4 52	10 49
5	F	7 30	4 42	morn	7 25	4 47	morn	7 19	4 52	11 57
6	S	7 30	4 43	0 8	7 25	4 48	0 6	7 19	4 53	morn
7	S	7 30	4 44	1 9	7 25	4 49	1 6	7 19	4 54	1 3
8	M	7 29	4 45	2 18	7 24	4 50	2 14	7 19	4 55	2 10
9	T	7 29	4 46	3 27	7 24	4 51	3 22	7 19	4 56	3 15
10	W	7 29	4 47	4 34	7 24	4 52	4 27	7 19	4 57	4 20
11	T	7 29	4 48	5 36	7 24	4 53	5 28	7 19	4 58	5 21
12	F	7 28	4 49	6 30	7 23	4 54	6 22	7 18	4 59	6 5
13	S	7 28	4 51	7 16	7 23	4 55	7 9	7 18	5 0	7 1
14	**S**	7 28	4 52	sets	7 23	4 56	sets	7 18	5 1	sets.
15	M	7 27	4 53	5 58	7 22	4 58	6 3	7 17	5 3	6 7
16	T	7 27	4 54	7 1	7 22	4 59	7 4	7 17	5 4	7 8
17	W	7 26	4 55	8 4	7 21	5 0	8 6	7 17	5 5	8 10
18	T	7 26	4 56	9 7	7 21	5 1	9 7	7 16	5 5	9 7
19	F	7 25	4 58	10 9	7 20	5 2	10 8	7 16	5 7	10 8
20	S	7 24	4 59	11 14	7 20	5 3	11 11	7 15	5 8	11 10
21	**S**	7 24	5 0	morn	7 19	5 4	morn	7 15	5 9	morn
22	M	7 23	5 1	0 21	7 18	5 6	0 18	7 14	5 10	0 15
23	T	7 22	5 3	1 31	7 18	5 7	1 27	7 13	5 11	1 22
24	W	7 21	5 4	2 47	7 17	5 8	2 41	7 13	5 12	2 34
25	T	7 20	5 5	4 2	7 16	5 9	3 55	7 12	5 14	3 48
26	F	7 19	5 7	5 14	7 15	5 11	5 6	7 11	5 15	4 59
27	S	7 19	5 8	6 15	7 15	5 12	6 7	7 11	5 16	6 0
28	**S**	7 18	5 9	rises	7 14	5 13	rises	7 10	5 17	rises
29	M	7 17	5 10	5 46	7 13	5 14	5 50	7 9	5 18	5 54
30	T	7 16	5 12	7 8	7 12	5 16	7 11	7 8	5 19	7 13
31	W	7 15	5 13	8 27	7 10	5 17	8 28	7 7	5 21	8 29

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	6	9 33 mo.	9 21 mo.	9 9 mo	8 57 mo.	8 27 mo.
New M'n	14	8 44 mo.	8 32 mo.	8 20 mo	8 8 mo.	7 38 mo.
1st Quart	22	11 9 mo.	10 57 mo.	10 45 mo	10 33 mo.	10 3 mo.
Full M'n	29	3 55 mo.	3 43 mo.	3 31 mo	3 19 mo.	2 49 mo.

AMERICAN AGRICULTURIST.

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The new year opens favorably for the industries of the country. There is a prospect that all kinds of labor will be better remunerated in the future, than they have been for some time past. One of the most important changes for the better, is in our foreign trade. Instead of importing, as we have done for many years, a hundred millions of dollars worth of foreign goods more than could be paid for by our exports, the past year's business has been the other way, and we have sold of our home products considerably over a hundred millions worth more than we have purchased. Fortunately we have a steady market for all our surplus farm products, and many of our manufactured goods, and a fair prospect of firmly holding these markets against all our competitors, while new markets and new articles of export are continually being found. The trade in dressed beef, for instance, which has sprung up within a year past, has become established and promises to grow steadily; this takes only what can be spared, without advancing prices here. An export trade in horses has also commenced, and several hundred have been shipped with profit. For fruit, vegetables, grain, dairy and other farm products, we have secure and growing markets, and manufactured articles from mills, factories, and workshops, have not only supplanted imported goods in our own markets, but are actually competing with them in the countries to which we were formerly customers. With our wonderful resources, the United States promises to become the great granary and factory of the world. If this promise is fulfilled, the greatest benefits will only be through the successful efforts of farmers and artizans to cheapen their products, while they at the same time maintain the excellent quality which has brought them into popularity. To the farmer the great problem to be solved is, how to lessen the cost of his produce, or increase its amount, and so increase both his gains and his comforts. To do this he must not only use industry, but all the aids which science offers him. True scientific farming is nothing more than the best possible practice. Nearly every farmer now understands this, and but very few are now inclined to think contemptuously of agricultural science. The attainment of this desirable end has been greatly helped by the efforts of the *American Agriculturist*, in popularizing scientific knowledge, by showing that this is simply the knowledge of how to do things in the best, cheapest, most effective, and most profitable manner—in short, how to make the most money out of our labor.

Hints about Work.

Seasonable Planting.—While it may seem strange to the Northern farmer, whose fields are bound in ice or covered with snow, to speak of planting, it will be plain enough to his Southern co-worker, who works, or may do so, in his fields the year round. Round potatoes planted this month in the Southern States, will make a first crop in time for a second to be planted in July. The second crop that may now be in the ground, may be left for table use, or kept covered with litter or leaves, to keep out frost. The newly planted crop should be earthed up as they appear above ground, to protect the tops from frosts. Oats sown at the South this month, will ripen almost as soon as fall sown oats, and will be more likely to escape rust and drouth than if sown later. The oat crop may be made a very valuable one, and by good management will yield a large quantity of fodder.

Compost Heaps.—Much may be done in making compost heaps. In the South there is a greater choice of materials than at the North, and anything that can be secured to add bulk to stable manure, whether it be cotton-seed, bone-dust, guano, night-soil, or other readily fermentable matters, should be collected and saved. Where salt-marsh mud, or swamp muck can be procured, these make a good basis for a compost heap.

Spreading Manure.—For some years we have spread manure during the winter upon meadows, clover-sod to be plowed for corn, and ground plowed for spring crops. The practice is economical of labor, and convenient, and we have no reason to believe that the manure loses any valuable constituent. The ammonia of fresh manure is in a nascent or inactive condition, and is not wasted during the cold weather. Those who may find it convenient to use manure in this manner, can do no harm by making the experiment. Dairy farmers can not do better than spread manure upon their meadows and pastures as fast as it is made.

Live Stock.—Regular attention to all live stock is very important. If an animal is only half fed, it is better that it be half fed regularly, as it will suffer less injury than if attended to one day and neglected the next. But it is poor economy to stint food. "The liberal soul shall be made fat." To see one's stock contented, comfortable, and happy, is not only a happiness to a good farmer, but money in his pocket. Regular hours of feeding, regular watering, regular rations, and regular rest, are conducive to comfort. With regularity there is no haste, no waste, nothing is forgotten, and nothing is done twice over. Animals then digest what they eat, and thrive.

Stables and Sheds should be kept dry and clean where frost is not severe, and where it is, the droppings should be removed daily, lest they be frozen into a mass and become difficult to handle. If dry sand or sawdust be scattered over a cleaned stall or shed, beneath the bedding, frozen manure can be taken up without trouble. It is preferable to have the stables so tight and warm that the manure will not freeze in them during the night. An animal can not rest easily upon a bed of frozen dung, nor in a mass of filth. A cold stable may be much improved by lining it with rough boards, and filling the space between the two boardings with rough litter, buckwheat-straw, or leaves.

Feed Racks.—Have a plenty of feed-racks in the yards. They save fodder, and prevent the master animals from driving weaker ones from their feed.

Corn-Fodder or Pea-Straw should be passed through a feed cutter before feeding it to stock in pens or yards where manure is made. The litter is then short, and the manure easily moved and spread, saving both time and labor.

Salt should be given regularly to every animal except poultry. Pigs should have only a very small quantity; one ounce weekly, to each full-grown one, is sufficient. Horses, oxen, and cows may have one ounce daily, and sheep may be supplied with all they will consume.

Sheep.—A run in a stubble field when the ground is bare, or the snow is only three or four inches deep, will be of advantage to the sheep. Any weakly ones should be turned out by themselves, in a place where they can be looked after. A constant watch should be kept over the flock, lest one should fall into a furrow or drain and be unable to recover itself. Ewes may thus be lost if neglected. Never fail to count the sheep when they go out and come in. Never compel them to jump over bars, but remove the lowest one, lest legs be broken. If a sheep's leg is accidentally broken, bandage it with splints, and keep it by itself for a week or two, until the fracture is repaired, which is easily done, without any dressing or other treatment.

Poultry.—If early eggs are desired, the pullets and young hens should be fed in the mornings with some cracked corn steeped in boiling water until it is only moderately warm. In the afternoons some corn warmed in the oven may be given. Between these meals some mixed feed of potato peelings, house scraps, and wheat screenings boiled together, and seasoned with red pepper, will be useful. A cabbage may be hung in the yard for them to peck at. Provide a clean, warm, but well ventilated house, and nests of clean straw.

Sundry Matters.—Be careful of lights in the barns and stables. Safe lanterns only should be used. We have used the glass globe lanterns, protected with wire, for many years without the least accident, or breaking one of them. Only perfectly safe oil should be used. Devoe's and Pratt's oils may be used with perfect safety anywhere. With these oils if a lamp should fall, there can be no fire if it is picked up again immediately. Choose a perfectly solvent Insurance Company in which to be insured, and take no risks. Keep roofs, roads, and sidewalks clear of snow. Ventilate the cellars whenever the weather is sufficiently mild. A tub of water placed in the cellar on very cold nights, will protect fruit or vegetables from freezing. Clean up all machines and tools and oil them, coat the bright parts with tallow, and cover them to keep out dust and dirt. Prepare for packing ice by and by, or pack it now if possible. A few loads of saw-dust should be hauled when convenient, so that it will be ready when wanted; when the wagon-box is filled, pile on filled bags to complete the load. Keep the shoes of horses and oxen sharpened or roughened, and do not attempt to drive un-shod oxen; it is poor economy to save a set of shoes and lose half of their working power.

Notes on Orchard and Garden Work.

From the questions addressed to us, in cases where we know that an answer would have been found in these columns, we infer that these notes are not read by all for whom they are intended. As formerly headed, "Work in the Horticultural Departments," it is likely that many have hastily passed them by as being "Horticultural," and having no interest for them. On this account we adopt another heading, which is not open to this objection. At the beginning of the year it may be well, for the sake of our many new readers, as well as the older ones, to say a word about the scope and object of these "Notes." Horticulture is, of course, only a branch of Agriculture, and it is often difficult to draw a line between the two. The notes on farm work include all the farm crops, the farm buildings, and domestic animals. We expect that every farmer will have an orchard and kitchen garden; we would have every one own a fruit garden; we hope that every farmer takes sufficient pride in the surroundings of his house to be interested in the notes of the "Flower Garden and Lawn"; and moreover, that he or some of his family will keep a few plants through the winter, whether it be only a pot or two in a window, or a larger number in a conservatory or a small greenhouse. All these are rural matters, they concern all who own and cultivate land, and are regarded as belonging to horticulture. While some of the topics are, or should be, of interest to all farmers, all of them are so to some farmers. The point we wish to impress is this: the notes under these heads are intended *for the same persons* as are those on general farm work, which precede them. Of course all are not equally interested in such matters; the large grain grower, the dairyman, or cattle raiser, cares for fruits and vegetables only so far as his family supplies go, though if his sons or daughters wish to cultivate choice fruits and flowers, he is quite willing, and will often encourage them in it. The majority of farmers have small farms, they hold high priced land, and they must raise high-priced crops. The tendency of farmers in the older States, or anywhere near cities or manufacturing towns, is to convert their small farms into large gardens, and raise fruits and vegetables to supply the near market. Our letters show that as large a number of inquiries are on matters to which the cultivators of large farms scarcely give a thought, as they are concerning farm crops proper. These notes are not in any manner intended for professional gardeners or nurserymen, but solely for farmers, or others who have a garden—small or large—and need such seasonable hints as are suggested by letters of inquiry, or by our own experience. While they must of necessity treat of similar subjects year after year, they are always fresh, and often embody new things, that might form topics for distinct articles; moreover, the answers to various letters are frequently included—though without so stating—in these notes. No one engaged in any branch of agriculture, can afford to do without a book devoted to his pursuits. There were never many sneers about book-gardening; even those who ridicule book-farming—a class that, we are happy to say, is rapidly diminishing—seem to admit that a book on gardening may be useful; "wise in their own conceit" upon farming matters, they are quite willing to accept aid in matters about which they know nothing. A book—if it is one fit to be regarded as a standard—puts the present state of our knowledge upon its subject in a compact form, for easy reference, and no matter how full we may make the paper, it can never supersede the use of books. It is the business of papers to record improvements and progress, and they can not consequently repeat first principles. Hence we say that, in every and all branches of soil cultivation, whether sheep-raising or strawberry growing, a book on the subject will pay for itself many times over—provided it is studied and its teachings heeded. As this is the season for book and brain work, we give under each head the names of the most useful works in each department.

Orchard and Nursery.

An orchard is defined as "An enclosure devoted to fruit trees," and a nursery as "A place for propagating plants—particularly a place for propagating trees or shrubs for transplantation."—As in the popular idea a nursery is almost exclusively regarded as a place where trees and shrubs are *sold*, no doubt that many, seeing the heading "Orchard and Nursery," have supposed that the notes referred to commercial nurseries, and passed them by as of no use to them. We do not presume to teach those who are in the nursery business, but our notes refer to such propagation of trees and shrubs, as may be practised by farmers and others. So with the orchard: one whose chief business is fruit-raising, does not look to his agricultural or horticultural paper for his guide, but in addition to his own experience, he has as aids all the standard works on fruit, looking to the journals for descriptions of new varieties and new methods, and the experience of others in the same occupation. But a dozen trees are as properly an orchard, as are a hundred acres in trees, and the owner of the smaller number is much more likely to need aid, than the regular orchardist. Hence our notes are mainly, though not entirely, intended for the farmer, or the one whose orchard is of moderate extent.

No fruit.—As strange as it may seem, there are many farms, and large ones too, on which there is no orchard. The settler in a wooded country is sure that trees will not grow on newly-cleared land; and the one who has opened his farm on the prairie, can not plant his fruit trees, until he has set a wind-break—and there is always something to prevent that. The years go by, and no trees are planted, and the family go without fruit as a necessary part of their daily food, and only know it as a luxury seldom to be indulged in, on account of the expense. It should need no argument to induce every farmer to have an orchard, large or small, and assuming that those who have no orchard will plant one, that those whose orchard is superannuated will set a new one, and those who have already a small orchard will supplement it with another, we give a few hints as to

Orchard Planting.—No one should plant an orchard, unless he can give the land entirely up to the trees, when they come into bearing. In the older States we hear much about the orchards "running out," the trees cease to be productive, and we are told that the "climate has changed," or that varieties have "degenerated." In all such cases it will be found that it is the land that has "run out," "changed," or "degenerated," and this because the land has been made to bear two crops, one of fruit, and one of something else; it has been "skinned" so beyond endurance, that it yields no fruit, and very poor weeds. Trees planted at ordinary distances, meet at their tops, and the same thing takes place with their roots, which so occupy the soil that there is not only no room for anything else, but they will themselves in time so exhaust the soil that it must be enriched.

Newly planted Orchards should be cultivated, and to secure this, crops may occupy the spaces between the trees, allowing each full possession of as much soil as its size demands, growing only such crops as require manure, and will leave the land in as good condition as when the trees were first set. As the trees increase in size, more space must be given up to them, and the strips in cultivation narrowed. When bearing begins, cropping should cease. Turning an orchard into a grain-field or a meadow, is a sure way to ruin the soil; turning it into a horse or cattle pasture will as surely ruin the trees. The best treatment of an orchard is to keep it in clover, and pasture pigs upon it; this is excellent for both the pigs and the orchard. The occasional plowing required to allow the clover to be renewed, will turn under a most excellent fertilizer, and the land will be kept improving. An incidental advantage to both orchard and pigs will be that the fallen fruit will be eaten, and the increase of insects checked. As to the

SELECTION OF VARIETIES.—Do not set too many kinds, no matter how highly they are praised by the catalogues or the books. Twelve varieties are a sufficient number for any fruit, whether for home use or market. If of apples, two of these may be of the very early, four for autumn, and six of winter sorts. What these varieties should be, is a matter of the greatest importance. It is impossible to give a list that will suit all over the country. The best guide is local experience, and one about to plant, should take time and pains to learn what varieties have done well in his locality. In a perfectly new country, it will be safest to plant those known to succeed over the widest range.

Where to Buy.—We are frequently asked this question, and our advice is—other things being equal—to deal with the nearest nurseryman. We have often given our opinion of tree-peddlers, and again advise caution. Some good nurseries send out agents or canvassers, and when satisfied that one of these is duly authorized by a responsible nursery to solicit orders, it may be safe to deal with him—but be sure of this first. At any rate it is best to send to one or more nurseries for catalogues, to compare prices. If several can combine and order together from a nursery, it will save freight.

When to Buy.—Send orders before spring opens, that the trees may not get heated or dried out on the road. Should the trees get frozen in transit, put the package in a cool cellar, or cover it outside with a heap of hay or straw, to thaw gradually.

What to Buy.—Planters make a mistake in preferring large trees. Overgrown nursery trees are usually not worth the cost of freight. Recollect that the larger the trees, the more the roots will be injured in taking them up. Many experienced planters prefer to set one-year-old trees, and claim that they come into bearing nearly as soon as those 3 or 4 years old, while having control of them from the beginning, they can shape them to suit.

Buying Nursery Stock.—Those who are not in a hurry, can purchase root-grafts of apples, and pears, and peaches "in the bud," i. e., the stocks were budded last year, have "taken," and will grow the coming season. Root grafts have the cion inserted on the root of a seedling at the "collar," and are offered by many nurserymen. In these forms trees can be bought very cheaply, and as they take but little room, the freight on them is low. If set in nursery rows, but a small percentage will fail. The rows should be wide enough apart to work between them with a cultivator, and the plants one to two feet in the rows, according to the time they are to remain. In this way one can get trees very cheaply, and by purchasing a large surplus, sell to his neighbors young trees, in a year or two, for more than enough to pay for his own.

Varieties.—In order to aid in a selection, we give a list of those varieties of apples, pears, peaches, plums, cherries, and quinces, that succeed over a wide extent of country, but this is not intended to supersede local experience. The varieties of other fruits are given under "Fruit Garden."

Apples.—Early.—Red Astrachan, Early Harvest, Tetofsky, Golden Sweet, Williams' Favorite.... Autumn.—Duchess of Oldenburg, Gravenstein, Jersey Sweet, Porter, Jefferis, Keswick Codlin, Maiden's Blush, Chenango Strawberry.... Winter.—Am. Golden Russet, Ben Davis, Bethlehemite, Fameuse, Johnathan, Lady, Mother, Red Canada, Wine Sap, Bentley's Sweet, Lady's Sweet, R. I. Greening.

Pears.—Early Summer.—Manning's Elizabeth, Doyenne d'Ete, Dearborn's Seedling.... Late Summer.—Bartlett, Beurre Giffard, Clapp's Favorite.... Autumn.—Belle Lucrative, Beurre d'Anjou, Beurre Hardy, Doyenne Boussock, Duchesse d'Angouleme, Howell, Seckel, Urbaniste..... Winter.—Dana's Hovey, Lawrence, Vicar of Winkfield. For market the largest number of trees should be Bartlett.

Peaches.—Beatrice, Early York, Early Crawford, Old Mixon Free, George the 4th, Ward's Late Free, and Smock, would give early and late.

Plums.—Unless one will work to keep rid of the curculio, it is of little use to plant the finer kinds. The improved wild sorts give good cooking fruit; the true Wild-goose is regarded as the best of these.

Cherries.—Where the curculio abounds, cherries do poorly. The Early Richmond is generally successful, and excellent as a cooking fruit. Coe's Transparent, Black Tartarian, Belle de Choisy, and Louis Phillipe, are amongst the most reliable.

Quinces.—The Apple, Angers, and Rae's Seedling are all useful and profitable.

Care of Young Orchards.—Keep out all stray animals by strong fences and closed gates.... Tramp the snow hard around the trees, to prevent the mice from working.... Sprinkle blood on the trunks to keep off rabbits. Trap or shoot rabbits. Where there are but a few trees, they may be protected from mice and rabbits by putting heavy roofing paper, or a shield of laths or corn-stalks, or old roofing tin, around the base of the trunks.

Insects.—Much can be done to prevent the ravages of tent caterpillars, by cutting off the clusters of eggs, which may now be seen glued in a band near the ends of the twigs.

Cions.—Cut them during mild weather, label, and store in sawdust or sand in a cool cellar.

Labels.—Renew all that are defaced, but do not depend upon them; they are convenient, but a permanent record or plan should always be made.

Books on Orchard and Nursery.—As a work comprising all that most farmers would care to know about the propagation and management of fruit trees, with descriptions of select lists of fruits, we especially commend Barry's "Fruit Garden." Another excellent work of a similar scope, is Thomas' "American Fruit Culturist." As a work of reference, containing descriptions of nearly all known varieties, Downing's "Fruits and Fruit Trees of America," is unrivalled. Warder's "Am. Pomology" is on apples; Quinn's "Pear Culture," and Fulton's "Peach Culture," are indispensable to those who engage in these fruits as specialties.

In the Southern States this should be an active month in the orchard; experienced fruit growers regard this as favorable a time to plant trees as later. Old orchards are to be invigorated by a shallow plowing, and where fertilizers, such as compost, or lime, or ashes are needed, apply them now.

The Fruit Garden.

The common method of growing the small fruits in the kitchen garden, is better than not growing them at all, but there are so many reasons why the small fruits should be by themselves, that any one who can possibly do so, should set apart a piece of land for the small fruits. Our remarks on these fruits, given under the head of Fruit Garden, apply to the varieties wherever grown.

Why Have a Fruit Garden?—Primarily as a source of home enjoyment and health, and secondarily as a source of profit. Most of us can recollect when a strawberry patch was a rarity, and cultivated raspberries and blackberries almost unknown, and when even prosperous farmers depended upon the pastures and thickets for the few berries they enjoyed. While the cultivation of small fruits has increased most wonderfully, they are by no means grown by all who might have them, if they would. The most indifferent as to their cultivation, are remarkably appreciative of the fruits themselves. As a matter of profit, they save other food, they save health, and they make the young people more contented. Besides these, there is scarcely a locality in which a surplus of good fruit will not only sell, but sell well. The boys and girls can readily earn enough to supply them with books, and their parents with the *American Agriculturist* and other papers besides, and thus pay in a double sense.

Books.—Barry's, Thomas', and Downing's works, referred to under "Orchard and Nursery," also include the small fruits, and there are works especially devoted to them. Fuller's "Small Fruit Culturist," and Roe's "Manual of Small Fruit Culture," are general works. Fuller's "Grape Culturist," and his "Strawberry Culturist," and others, in the Publishers' book list, are special treatises.

Cranberries do not properly fall under the Orchard or the Fruit Garden, they being a special crop, and profitable only in peculiar localities. White's "Cranberry Culturist," gives the fullest directions, and anticipates every inquiry.

Soil and Manure.—The fruit garden should have a rich and well-drained soil, and the spot should be selected within easy reach of the house, so that an eye can be kept upon trespassers, and the picking be readily done by members of the family. Well decomposed manure only should be used, and abundant materials provided for mulch. In some of the Southern States the soil may be made ready, and much planting may be done this month, but in colder localities this is not praticable until winter is over. It is especially desirable that the soil be of such a character, and drained if need be, that it may be worked very early, as early planting is especially necessary with some fruits. At present we enumerate the leading varieties, to aid in making a selection preparatory to planting.

Barberries are seldom cultivated for their fruit, except by persons from New England, where they often line the roadsides, and are both ornamental and productive of handsome very acid fruit, which makes excellent preserves. There are several species and varieties of barberry, but none superior as a fruit to the common Barberry. It makes a very neat hedge, and may be used to separate the fruit garden from the kitchen or other garden. Readily multiplied by cuttings.

Blackberries need abundant room; 6 feet apart each way at least, and 8 feet is better. The best is Kittatinny. Wilson's Early is early, productive, but not quite so good. Dorchester, one of the best, but not productive. The New Rochelle is large, showy, but very sour unless dead ripe, and is less hardy. The plants are propagated from root-cuttings, and will bear the next year after planting.

Currants.—There are many varieties in the catalogues, though the desirable ones are few. None are superior in flavor to the old Red and White Dutch; if these have rich soil, and are well pruned, the fruit will be larger and finer than it usually is. The Versailles, Red, and White Grape, are larger and best for general culture. Black currants are not popular in this country, though some value them for jam and jelly; the Black Naples is best. Easily grown from cuttings.

Dwarf Trees.—The only large fruits in place in the fruit garden, are those which have been grafted upon some dwarfing stock. Except the pear these trees have little practical value. The pear is dwarfed by budding it upon a quince stock. When so treated, it bears at an early age, and usually produces a good crop, for the size of the tree, of large and exceedingly fine fruit. Some varieties do not succeed on the quince, while with others the fruit is greatly improved. There are but few cases in which we would advise planting dwarf pears for profit, but if one wishes to test many varieties in a small space, the dwarfs allow him to do so, and they are always beautiful and interesting objects. Among those that do so much better on quince that they are often planted for profit, are the Duchesse d'Angouleme, Beurre d'Anjou, Louise Bonne de Jersey, and Howell..... Dwarf apples, grafted on "Paradise" stocks, are charming ornaments; they may be trained as pyramids or bushes, and when well filled with large fruit, are a great curiosity to those unfamiliar with such things. Some of the so-called dwarfs are grafted on "Doucin" stocks, and grow too large for the fruit garden.

Grapes are among the easiest grown and most esteemed among the small fruits; they would be more cultivated than they are, were it not for the popular notion that great skill is required to prune them. By intelligently following a few simple rules, which we give at the proper time, any intelligent person can do all that the vine requires. The grape-vine is one of the most tractable of plants; it may be made to fruit within a foot of the ground, at the top of a fence, or along the second story of a house; the sides of barns and outbuildings may be covered with the foliage and clusters, they may be grown on the simplest trellis, or even on a rude pole. Most of the popular varieties may be grown from cuttings set in the open ground; the plants at the nurseries are very cheap, and there is no reason why every farmer's family, or every family that owns an acre of land, or even a village lot, should not have all the grapes they can eat. We say to every one who owns land, be it much or little, plant one vine, if you can do no more, plant ten if you can, and as many more as you have room for, so that you and your children can daily have your fill during the grape season.

Varieties of Grapes.—As the Bartlett is the most popular and useful among pears, so is the Concord among grapes. There are few localities in which it will not succeed. It is not of the best quality, but whoever has a vine is very sure to have grapes. So we say, if but one kind is to be planted, let it be the Concord. The Wilder, (Rogers' No. 4), and Barry, (Rogers' No. 43), have, with us, all the good qualities of the Concord, and larger and better fruit. The earliest grapes, with us, are the Creveling and Eumelan; not making regular bunches, are unsuited for market. Hartford Prolific, not so good as these, is early, hardy, and abundant. These are black grapes; the very best hardy black grape, we know of, is the Alvey, a poor bunch and poor bearer, but we value it beyond all others. Among red grapes, Catawba and Iona, where they succeed, are among the best. Delaware is very sweet, and generally liked, and Lindley and Agawam, (Rogers' 9 and 15), are the best of Rogers' of this color. White grapes are more sought after than any others, but we have few good ones. The hardiest is Martha, sickishly sweet and unpleasantly foxy; Croton succeeds in some localities; Lady and Elvira are of promise, but are yet to be generally tested. There are new varieties not yet offered, superior to any yet in cultivation, but have yet to be tested.

Gooseberries.—These are propagated and treated in the same manner as currants. While this is one of the most popular fruits in Europe, the kinds so successful there are well nigh worthless in our hot summers, and we have had to rely on our native seedlings. The grafting as standards, upon the Missouri currant, promises to allow us to enjoy the choicest English kinds; a full account of these was given in September last. Of the natives the Downing is best; the Mountain, Houghton, and Smith's seedlings are all very productive.

Raspberries.—The choicest varieties are tender, and unless they can be laid down and covered with earth for the winter, they should not be planted. Brinckle's Orange, Red Antwerp, and Franconia, belong to this class. The Philadelphia is a poor berry, but gives a large crop, and is quite hardy. The Brandywine, Highland Hardy, and Herstine are among the best hardy sorts. Black-caps are liked by many; of these the Doolittle, and Mammoth Cluster are among the best. The Black-caps are propagated by layering the tips of the shoots; the others multiply by suckers.

Strawberries are so easily managed, and so persistently propagate themselves, there is no reason why every farmer's family should not have the fruit three times a day, during their season, besides a surplus to sell at the nearest village. Any one who can cultivate potatoes can grow strawberries, as there is no plant, the management of which is more simple, as we shall show at the proper time. We now attend to the selection of varieties, having reference to home use and a near market. The Wilson is the popular market berry, but it is not desirable for family use; Chas. Downing is superior to it in every respect, save firmness, which adapts it to shipping. We regard the Charles Downing as the most generally useful berry for home cultivation. Nicanor, Seth Boyden, and Kentucky are other well tested sorts. Monarch of the West, and Star of the West, promise well. In certain localities, with rich, strong soils, President Wilder, Triomphe de Gand, Jucunda, and others are valuable, and each year new varieties are offered, which those who can afford the money and time may test. The plants should be from last year's runners, and not old clumps split up; set as soon as the frost is out, and if well cultivated during the season, they will give a full crop next year.

In the Southern States planting of all kinds may be done, grape vines pruned and trained, and everything put in order for an early start.

Kitchen Garden.

As we have hinted with regard to fruit culture, a farmer may often sell from his Kitchen Garden enough to pay all its expenses, and it is very easy, where there is a demand for fresh vegetables, to extend the kitchen garden into a market garden, the management of the two being nearly the same. Indeed, as before hinted, in all localities near markets, farmers find their profit, if not in market gardening proper, in what we may call farm gardening. In market gardening, a large portion of the products are of a perishable nature, like lettuce, radishes, etc., and must be marketed at once, while farm gardening is devoted to crops in larger demand, and which are more permanent, such as cauliflowers, celery, onions, and the root-crops. Some, near New York, get a larger net profit from a single acre of spinach, than others do from a farm of 30 acres. In localities where there are large express, rail-road, or other stables, carrots are in demand, and we have known a farmer to make from $175 to $300 per acre on these roots. It is only in thickly settled communities, or with easy access to a good market, that these returns are possible, but it is well for every farmer thus located, to find out if there is not some such crop that he may grow with profit.

Books.—Henderson's "Gardening for Profit," Quinn's "Money in the Garden," and Brill's "Farm Gardening and Seed Raising," may all be studied with benefit, each contains something the others do not.

Varieties.—Next month we shall, as usual, enumerate the most profitable varieties and the novelties.

Plants in Cold Frames must be aired whenever the outside temperature will allow.

Preparatory and other work.—Keep the manure pile increasing....Overhaul and repair hot-bed sashes or make new ones....Make a supply of straw mats for early spring use....See that the leaves or litter are not blown away from spinach or other covered crops....Roots and celery in trenches will need more covering as the cold increases.... Repair implements and make markers and all other conveniences likely to be needed....Overhaul the seeds on hand, and throw away all doubtful ones.

At the South.—Put in early potatoes, on light soils; on heavy soils next month is better....Sow at once hardy vegetables, such as peas, radishes, lettuce, spinach, etc., and at intervals for succession ....The root crops, beets, carrots, parsnips and salsify, are sown in the last half of the month.... Prepare hot-beds and sow early cabbages.

Flower Garden and Lawn.

Our notes on other matters are so full that this department must wait until another month for details. The principal thing to be done is to prevent injury to the trees and shrubs. Some thoughtless people, when snow affords sleighing, will drive any where across the grounds, often to the injury of choice shrubs. Have the drive way, if need be, defined by stakes and stretch a fence-wire to keep off such persons....Evergreens are often loaded with snow, which should be shaken off before it becomes hard and icy; if the lower branches are covered in a deep snow, this should be shoveled away, to prevent breaking the limbs as the snow settles after it has frozen to them.

In the Southern States.—Prune roses and flowering shrubs generally....Camellias out of doors, and about to bloom, should be surrounded by a frame, over which a cloth can be thrown in unusually cold weather, to protect the buds.

Greenhouse and Window Plants.

The treatment of plants in windows is not essentially different from that for those in greenhouses, but in the latter case the conditions being more under control, the matter is much easier....Bring bulbs and other plants that have been potted for forcing into the greenhouse, or dwelling room; starting a few at a time for a succession of bloom ....Water only as the plants need it; more plants are killed by keeping the soil soaked and soggy, than by the other extreme....Give air on mild days, but avoid cold drafts....On very cold nights remove house-plants back from the window, and cover with a sheet or newspapers....Cover the plants when the room is swept, occasionally wash smooth leaves with warm water applied by a sponge; shower the plants with rough or downy leaves....Insects are not difficult to keep down if taken as soon as they appear. Smoke in the greenhouse, and tobacco water for window plants, kills lice or "green fly." Frequent showering and washing removes the red spider; mealy bugs can be picked off with a pointed stick, and scale removed by the use of a brush and warm soap suds. ....Sow seed of Sweet Alyssum, Mignonette, and other annuals for blooming later.

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Crops in Georgia.—Circular No. 33 issued by the State Department of Agriculture of Georgia, by the Commissioner, Doct. Janes, gives a consolidated report of crops of 1876, with the general averages of yield. Corn is given as yielding 22 per cent more than the crop of 1875, and the breadth planted as 10 per cent greater; a total increase of 34 per cent over last year. The cost per bushel is 43 cents against 58 cents last year. Cotton has yielded 3 per cent less than last year, and its cost of production is about one cent and a quarter per pound less than that of 1875. This reduction is due to the increased home production of provisions and supplies, a result which is to be credited, perhaps entirely, but certainly in great part, to the valuable and successful labors of the Department. No farmer or planter in Georgia, or the neighboring States, can afford to neglect the study of the circulars issued by the Georgia Agricultural Department.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Dec. 12th, 1876 and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	335,000	2,267,800	2,353,500	126,000	560,000	1,050,000
26 d's *last* m'th	331,000	2,196,000	2,315,000	207,000	419,000	1,437,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 d's *this* m'th	381000	2,414,000	2,387,000	97,000	312,000	923,000
26 d's *last* m'th	312,000	2,117,000	2,613,000	141,000	199,000	1,436,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876..	335,000	2,267,800	2,358,500	126,000	560,000	1,050,000
26 days 1875..	389,000	3,115,000	1,904,000	42,000	207,000	796,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
24 days 1876..	381,000	2,414,000	2,387,000	97,000	312,000	923,000
26 days 1875..	401,000	3,769,000	1,886,000	74,000	502,000	1,812,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Nov. 8, 1876..	2,048,233	3,206,003	294,381	478,441	1,002,891	495,640
Oct. 9, 1876..	1,931,892	1,195,387	158,305	91,245	825,187	421,751
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438
Dec. 7, 1875..	5,878,036	816,962	99,908	305,961	1,252,005	258,364
May 11, 1875...	969,804	1,542,924	16,124	16,537	545,209	229,655

4. *Exports from New York, Jan. 1, to Dec. 9.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1876.	1,779,840	23,188,471	16,028,165	1,209,167	88,097	617,376	654,859
1875.	1,739,299	25,054,035	12,495,349	152,952	1,505	133,754	415,019
1874.	2,055,423	33,700,159	18,329,781	641,661	3,320	110,334	425,553

CURRENT WHOLESALE PRICES.

	Nov. 13.	Dec. 12.
PRICE OF GOLD	**109 3-4**	**107 1-4**
FLOUR—Super to Extra State	$4 25 @ 5 75	$5 00 @ 5 90
Super to Extra Southern	4 25 @ 8 25	5 00 @ 8 50
Extra Western	5 15 @ 9 50	5 50 @ 9 75
Extra Genesee	5 75 @ 6 75	5 85 @ 6 85
Superfine Western	4 25 @ 5 00	5 00 @ 5 50
RYE FLOUR	2 50 @ 5 10	3 00 @ 5 20
CORN-MEAL	2 65 @ 3 4	2 70 @ 3 50
BUCKWHEAT FLOUR, ℔ 100 lbs	3 00 @ 3 40	3 35 @ 3 75
WHEAT—All kinds of White	1 25 @ 1 40	1 25 @ 1 50
All kinds of Red and Amber	1 05 @ 1 37	1 00 @ 1 50
CORN—Yellow	59 @ 62	56 @ 61
Mixed	55 @ 60½	55 @ 60
White	58 @ 62	50 @ 59
OATS—Western	30 @ 45	33½@ 45
State	44 @ 51	46 @ 50
RYE	72½@ 92	80 @ 95
BARLEY	75 @ 1 18	68 @ 1 15
BUCKWHEAT	75 @ 85	83 @ 85
BARLEY MALT	75 @ 1 30	75 @ 1 25
HAY—Bale, ℔ 100 lbs	55 @ 90	50 @ 90
STRAW, ℔ 100 lbs	45 @ 90	45 @ 90
COTTON—Middlings, ℔ lb	12¾@ 12⅞	12⅛@ 12⅞
HOPS—Crop of 1876, ℔ lb	23 @ 38	15 @ 33
" old, ℔ lb	4 @ 20	10 @ 20
FEATHERS—Live Geese, ℔ lb	50 @ 57½	45 @ 58
SEED—Clover, ℔ lb	15 @ 15¼	15¼@ 16
Timothy, ℔ bushel	1 95 @ 2 00	1 90 @ 1 95
Flax, ℔ bushel	1 55 @ 1 60	1 60 @ 1 65
SUGAR—Refi'g & Grocery ℔ lb	8½@ 10⅝	8¾@ 11⅛
MOLASSES, Cuba, ℔ gal. 50 test	35 @ 36	38 @ 40
New Orleans, new crop, ℔ gal	55 @ 65	50 @ 60
COFFEE—Rio (Gold)	16¼@ 19½	16½@ 20
TOBACCO, Kentucky, &c., ℔ lb	6 @ 18	6 @ 18
Seed Leaf, ℔ lb	4½@ 50	4½@ 50
WOOL—Domestic Fleece, ℔ lb	30 @ 52½	30 @ 50
Domestic, pulled, ℔ lb	25 @ 45	22 @ 40
California, spring clip	15 @ 30	15 @ 28
California fall clip	12 @ 23	12 @ 22
TALLOW, ℔ lb	8¾@ 8⅞	8 @ 8⅜
OIL-CAKE—℔ ton	38 50 @39 00	37 00 @37 50
PORK—Mess, ℔ barrel	— @17 00	16 75 @16 87½
Prime, ℔ barrel	— @ —	— @14 00
BEEF—Plain mess	8 00 @10 00	10 00 @11 50
LARD, in trcs. & bbls, ℔ 100 lb	10 25 @11 00	10 00 @10 32½
BUTTER—State, ℔ lb	22 @ 38	22 @ 37
Western, poor to fancy, ℔ lb	16 @ 35	16 @ 36
CHEESE	5 @ 13¾	6 @ 15
BEANS—℔ bushel	1 30 @ 2 75	1 50 @ 2 40
PEAS—Canada, in bond, ℔ bu	93 @ 93½	90 @ 93
EGGS—Fresh, ℔ dozen	25 @ 30	28 @ 33
POULTRY—Fowls	10 @ 15	8 @ 11
Turkeys—℔ lb	10 @ 16	9 @ 16
Geese, ℔ pair	1 25 @ 2 00	1 25 @ 2 00
Geese, ℔ lb	10 @ 16	7 @ 13
Ducks, ℔ pair	50 @ 90	50 @ 1 00
Roosters, ℔ lb	8 @ 9	6 @ 8
Chickens, dry pick'd lb	10 @ 18	9 @ 13
GROUSE, ℔ pair	50 @ 1 00	50 @ 90
PARTRIDGE, ℔ doz	30 @ 75	40 @ 90
DUCKS, Wild, ℔ pair	25 @ 1 50	25 @ 1 50
QUAIL, ℔ dozen	1 50 @ 1 75	1 25 @ 1 50
VENISON, ℔ lb	9 @ 17	8 @ 18
RABBITS, ℔ pair	20 @ 35	30 @ 35
HARES, ℔ pair	40 @ 60	40 @ 60
TURNIPS ℔ bbl	75 @ 90	75 @ —
CABBAGES—℔ 100	3 00 @ 7 00	3 00 @ 7 00
ONIONS—℔ bbl	1 50 @ 2 75	1 00 @ 2 75
POTATOES—℔ bbl	2 00 @ 3 00	2 50 @ 3 37½
SWEET POTATOES—℔ bbl	3 00 @ 3 50	3 00 @ 4 00
CAULIFLOWER, ℔ bbl	— @ —	1 00 @ 2 50
BROOM-CORN	3 @ 8	3½@ 8
GREEN PEAS, ℔ bush	1 50 @ 1 55	1 40 @ 1 45
TOMATOES, ℔ bskt	75 @ 1 25	— @ —
CRANBERRIES—℔ bbl	7 50 @10 00	7 00 @ 9 50
" ℔ crate	2 62½@ 3 00	2 75 @ 3 00
APPLES—℔ barrel	50 @ 2 00	75 @ 2 00
SQUASH, ℔ bbl	75 @ 90	1 00 @ 1 75
GRAPES, ℔ lb	6 @ 11	4 @ 11
CIDER, ℔ gal	6 @ 12	7 @ 9

Gold has been up to 109¾, and down to 107, closing Dec. 12, at 107¼, as against 109¾ for Nov. 12; 109 on Oct. 12, and 111⅞ on July 12, 1876, and 114⅜ on the 13th of Dec., 1875... The month's business has been again seriously impeded in all branches by the political excitement; as also by the variable cable reports as to the political situation abroad, and the course of the foreign markets. The decline in gold, and extreme firmness in ocean freights, have also worked against activity in produce, on export account....Breadstuffs opened with more animation at advanced prices, with a good demand for shipment, especially for Flour, Wheat, Corn, and Rye,—Corn, in good part for Italian ports, and Rye mainly for Germany. Toward the close, however, the inquiry from all sources fell off materially, and values yielded slightly in the instances of Flour, while Spring Wheat, and most kinds of Barley ruled lower. Red and Amber Winter Wheat was quite firm at the improvement, the latest sales having been at about the highest figures of the month, including prime Amber Missouri, 56,000 bushels, in store, to a local miller, at $1.40; and fancy Amber Indiana, 24,000 bushels, in store, for shipment and milling, at $1.50. Corn ruled comparatively firm, on a fair demand. Rye closed up strong and wanted,—prime State selling at 95c.; good to prime Western at 82@85c. Barley declined materially, under heavier supplies and more urgency to sell, while the demand was moderate. No. 1 Canada closed at $1.12½@$1.15; ordinary two-rowed State sold at 68@70c.; and sundry car lots of Feed stock at 46@50c. About 43,000 bushels California Barley, of late arrival here, have been taken for Cincinnati or Chicago, on private terms. In the Flour line, very liberal transactions were reported early in the month, largely in Minnesota Extras, at buoyant rates; but the final dealings were quite limited....Provisions have been freely dealt in, especially hog products, but at very irregular prices....Cotton has been quite active, but at lower figures. Toward the close, more extensive purchases were reported for shipment, chiefly to Liverpool....Wool has been in less demand, and somewhat less buoyant as to values. The inquiry from manufacturers has been comparatively very moderate....Hops have been in less request, and at the close quoted easier....Seeds have been in fair demand, closing firmly....Hay and Straw moderately sought after at steady rates....Tobacco has been fairly active, and essentially unaltered as to prices....Naval Stores, more inquired for and dearer....Petroleum has been unusually brisk, mainly on export account, and has advanced sharply,—crude in bulk closing here at 15¼c.; in bbls. at 18½c.; refined, in bbls., for December delivery, at 32@32¼c.; and ditto, in cases, at 35@37c.—the highest figures reached in a long time... Ocean grain freights have been fairly active, and rates have been quoted higher. Cotton and Petroleum freights also active....Grain rates by steam to Liverpool, closed on the 11th of Dec. at 8@9*d*; to Glasgow at 9¼*d*; to London at 9*d*; to Liverpool, by sail, at 8@8½*d*; London, by sail, at 8½@9*d*. per bushel. Provisions by steam to Liverpool, 45*s*.@55*s*. per ton; Cotton at ⅜*d*. ⅌ ℔. Grain, by sail, for Cork and orders, at 7*s*.@7*s*.3*d*. per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Nov. 20	11,763	55	1,874	29,577	40,586	83,849
Nov. 27	8,325	123	1,713	21,277	33,946	65,384
Dec. 4	10,402	151	1,358	26,724	32,533	71,168
Dec. 11	9,649	99	1,476	31,732	35,270	78,226
Total for 4 *Weeks*	40,139	428	6,421	109,304	142,335	298,627
do. *for prev.* 5 *Weeks*	48,674	364	10,262	153,662	146,037	359,999

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	10,034	107	1,605	27,326	35,583
do. do. *last Month*	9,735	73	2,052	30,752	29,407
do. do. *prev's Month*	10,869	48	3,215	26,801	24,422

Beeves.—The market for the past four weeks has been marked chiefly by dullness. An advance of ½c. ⅌ ℔ in the first week was soon lost, mainly by the unfavorable pressure of thin and poor Texans, and receipts of western dressed beef. Nothing was able to resist the downward tendency. The demand for fine fat beeves for foreign shipment, of which about 1,000 head were shipped last week, did not help things, and these extra beeves sold for 11½c. per 60 ℔ to the cwt. Sixty head of fat Christmas cattle were sent alive from Philadelphia. Texans have sold for 2½@3½c. ⅌ ℔ live weight, with bulls at 2½@3c. The market, as we close our report, is dull, prices ranging from 7@7½c. ⅌ ℔ for poor cattle: 8½@9½c. for pretty good, and 10@10½c. for good to choice. A few extra steers of 57 ℔s. to the cwt., brought 11c. ⅌ ℔. While the average was helped by some good stock, the general decline during the last week was fully ½c. ⅌ ℔.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Nov. 20	6¾@10½c.	8 @ 9¾c.	9 c.
Nov. 27	7¼@11 c.	8½@10¼c.	9½c.
Dec. 4	7 @11½c.	7¼@10½c.	9¼c.
Dec. 11	7 @11 c.	8¾@10 c.	9¼c.

Cows.—For poor cows there is very poor sale. A few of this character have sold for $35, while 25 fairly good cows averaged $60. An extra premium cow sold for $125. Many springers are arriving that pass at once into the hands of country dealers....**Calves.**—Dressed veals are plentiful, and live are too numerous for the limited demand. Fat dressed veals sell for 10@11c. ⅌ ℔, choice have brought 12c. Dressed grassers are dull at 4@6c. Live calves are worth 3½@5c. ⅌ ℔ for grassers and half fat veals; 6@8½ for good, and 8½@9c. for choice....**Sheep.**—The supply has outrun the demand, and after a dull time through the month, prices are down from ¼c. to ½c. ⅌ ℔. Lambs are now sold with sheep, varying from 5 to 6½c. ⅌ ℔. Prime sheep in lots, with lambs mixed in, and extra in quality, sell up to 7c. ⅌ ℔; good sheep at 6@6½c.; fair, 5½c., and poor go off very slowly at 3½@4½c. ⅌ ℔ live weight....**Swine.**—Live hogs sold the last week of our report at 6⅝c. ⅌ average 190 ℔s., and 6c. ⅌ 240 ℔s. Dressed are firm at 7¼@7¾c.

Prices of Feed.

Bran, per ton	$18.00@	$20.00
Middlings, per ton	19.00@	21.00
Ground Feed, per ton	15.00@	21.00
Linseed-oil-cake, western, per ton	44.00@	47.00
Cotton-seed-cake, per ton	25.50@	40.00
Chandler's Scraps, per ℔	3@	4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ⅌ ton		$56.50
do. do. guaranteed, ⅌ ton		56.00
do do. rectified, per ton		61.50
Mapes' Nitrogenized Superphosphate, per ton	40.00@	50.00
" Plain Superphosphate (mineral), per ton	30.00@	35.00
" Bone Superphosphate, per ton	40.00@	45.00
" Prepared Fish Guano, per ton	35.00@	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton		40.00
" " Dry ground Fish Guano, ton		45.00
" " Pine Island Guano, per ton.		45.00
Fish Guano (crude in barrels), per ton		18.00
Bone Black, per ton	25.00@	28.00
Bone Flour, per ton	40.00@	45.00
Rawbones Ground (pure), per ton	33.00@	40.00
Rough Bones, per ton	22.00@	25.00
German Potash Salts, (25@35 per cent), per ton	25.00@	30.00
Gypsum, Nova Scotia, ground, per ton	8.00@	9.00
" In barrels, per bbl		1.25
Wood Ashes, per bushel	16 c.@	18 c.
Nitrate of Potash (95 per cent.), per lb.	9 c.@	9½c.
Sulphate of Potash (80 per cent) per lb.	3½c.@	4 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@	3¼c.
Nitrate of Soda, per lb	4½c.@	5 c.
Sulphate of Ammonia (25 per cent.), per lb.	5 c.@	5½c.
Dried Blood or Dried Meat per unit of ammonia	$3.00@	$ 4.00

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Remember The Valuable Premiums.

See Page 33, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

☞ **N.B.—The Postage Law.**—The present postal law **requires pre-payment of postage by the publishers.** Each subscriber must therefore remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-five are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last twenty volumes (16 to 35) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

CLUBS—Increasing: Advantages: Lower terms are given to clubs of four or more subscribers, partly because it costs less to mail in packages, with only name slips on each paper; and partly to encourage getting up large lists. We do not object to a person's adding names to his club from other post-offices, because such additions usually become centers of other clubs....A Club can at any time be increased by the addition of other names, if these start with the same date as the others....Any one having sent a small club at one price, may raise the club to a large figure, and lower rate for all. Thus: one having sent 4 names at $5.40, may send 6 names more for $7.60, making $13 for the whole 10, including postage. And so for other club rates. . The Terms are: Under four names $1.60 each; four to nine names $1.35 each; ten to nineteen names, $1.30 each; twenty names and upwards, $1.10 each. Postage always pre-paid by the Publishers.....Premium clubs may be gathered at any number of post-offices, if all are sent in by the same person.

It Will Pay to supply yourself, your sons, and your workmen, with good papers and books. $10 to $20, or more, expended in this way, will come back every year. Your sons will be kept from idleness and mischievous company; they will understand and respect their work more; they will gain new ideas and learn to think and reason better; they will learn to make their heads help their hands; they will labor more intelligently and be happier because their minds will be developed, and they will have something to think about while at work. Better sell an acre of land than not to have these mind cultivators. Any *intelligent* man will make more off from 9 acres than the unintelligent one will from 10 acres. Think of this in planning and providing for your sons in the future. Store their growing minds with useful ideas, or the devil will fill the vacancies with very undesirable tenants (ideas). (The premium list on page 33 will afford to many an opportunity to get some books free of expense; and plenty of good books, to be *delivered* by mail or otherwise, will be found in the advertising pages.)

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German edition of the *American Agriculturist.* It contains not only the Engravings, and all the essential reading matter of the American edition, but an additional *Special German Department,* edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other one contains so much useful information, or a tithe of its engravings. The Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners, and all would find it pay to do so.—Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc., because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond a couple of German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ Please call the attention of your German neighbors to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

Study the Advertising Columns.—We often take up a daily or weekly newspaper and carefully read all the Advertisements through, and never do this without getting some useful information. One learns what business is being done, and how it is done—what is for sale, and by whom. *Our* business columns are of especial value, because of the care taken to exclude all advertisements from parties not believed to be honest. We mean to advertise for no parties who have not both the ability and intention to do all they promise. In order to please advertisers, we repeat the request that those sending orders, or for circulars, etc., to our patrons, will mention *where* the advertisements were seen. We also like to have advertisers thus get some idea of the large number of intelligent and enterprising people they find among our readers.

A Good Work, it will be, to suggest to a neighbor to supply himself and family with the thousand or more columns of good reading, practical hints and suggestions, useful information, and the 600 to 700 pleasing and instructive *new* engravings that will be given in the *American Agriculturist* during this year. It will do him and his family useful service. Do him and us the favor of suggesting his subscription for the present volume.

The Death of Charles D. Bragdon.—The agricultural press has lost one of its best writers, and one of the most industrious workers, in the death of Mr. Bragdon, which occurred at his father's residence at Port Ontario, N. Y., on the last day of November. His disease was consumption, and his health had been such for some two or three years that he sought relief in a warmer climate, but without avail. Mr. B., when quite young, was a favorite with the late Dr. Kennicott, whose teachings did much to prepare him for his future career. He was at one time engaged upon the "Prairie Farmer," then upon the "Rural New Yorker" at Rochester; he went to Chicago, again, as agricultural editor of the "Chicago Tribune," and while on that paper filled other positions. When the "Rural New Yorker" was removed to N. Y. City, he became its principal editor, and continued in that position until he could no longer discharge its duties. He was a versatile writer and an indefatigable worker; he for many years reported the meetings of the American Pomological Society, and the volumes of its

"Proceedings" remain as a lasting record of his painstaking industry. Personally, Mr. Bragdon was one of the most positive of men; as one writer aptly expresses it, "he did his own thinking." He was one of the most out-spoken of men, and an opponent had never any doubt as to his position; on the other hand he was one of the most devoted of friends, a large circle of whom will miss his genial presence, and when they mourn, what seems his untimely departure, will think with pleasure upon his brilliant talents and his winning ways.

The Death of J. B. Root, of Rockford, Ill.—A circular received about the middle of last month informs us of the death of Mr. Root, after a short illness, but gives neither the date of his death or other particulars. Mr. R. was one of the leading market gardeners and seed-growers of the West, and was the author of a very useful "Garden Manual." He was an occasional contributor on gardening matters to our columns. His writings are of an eminently practical character, and show great fertility of expedient, and we are informed by those who have visited his gardens that they were managed with skill and showed the most careful culture. Such a man is a loss not only to his own State, but to the whole country.

The Uses of Asbestos.—Mr. H. W. Johns, besides using asbestos in his roofing, has recently perfected a paint in which asbestos is largely employed, to protect wood-work of all kinds from ordinary exposure to fire. He also works it into a covering for steam and hot air pipes, which prevent all danger to wood-work from these, and at the same time, by preventing the waste of heat, make a saving in fuel.

Lost Letters.—Who is to Blame?—The Dead Letter Office not long ago made out an estimate that one letter in every 75, is defective in date, or direction, or signature, or sealing. We, in common with others, often receive letters of this class. Letters come with considerable sums of money, entirely *unsealed*—an invitation to anybody to help themselves to the contents. Others contain an order with money, but lacking either name of place or signature, or both. In such cases they must be held until the writer sends a second letter, "blowing up" the Publishers or the P. O. Department. In one such case the writer omitted his residence in the second letter. In those cases, "Who is to blame?"—*Moral.*—ALWAYS date a letter in full, giving *P. O.*, (not merely the town), AND give the *State*; *sign* it; *seal* it; *direct* it plainly and rightly, and read over the direction.

The Complete American Trapper, or the Tricks of Trapping and Trap Making, by Wm. H. Gibson, N. Y.: James Miller. This adds a handsome volume to the list of works on trapping, a subject always fascinating, as it leads to a life in the woods, and the pleasures, (and sometimes the reverse), of camping out. This work is especially intented for boys, and is illustrated with a profusion of engravings, which, with the excellent style of the work, make it a capital gift for boys, especially those who live in the country. Trapping involves the destruction of life, and so far as that goes, seems cruel, but it is often useful and sometimes necessary, and as boys will set traps at any rate, it is proper that they should know how to do it in the best and most merciful manner. Sent from this office, post-paid for $1.75.

Books on Sheep,—"Dr. Wm. C. P." Hooversville, Md. Randall's "Sheep Husbandry," and "Fine Wool Husbandry," refer chiefly or wholly to the Merino. Mr. Randall devoted his sole attention to this breed, and his books are useful, although not altogether recent. The only book that treats of all the breeds of sheep, kept for mutton or wool in this country, or that might be desirable to keep, is Stewart's "Shepherd's Manual." In this book Lincolns, Leicesters, Cotswolds, Southdowns, Hampshiredowns, Oxforddowns, Dorsets, Welsh sheep, Blackfaced Scotch, Cheviots as well as Merinos, are treated of, as well as several promising cross breeds such as Leicester-merino, Cotswold-merino, Cotswold-southdown, and Beacon-downs, the latter a native American cross. The "Shepherd's Manual" is published by the Orange Judd Company, and sold for $1.50.

Bergen Co., N. J., Poultry Exhibition.—The first annual exhibition of the Bergen Co. (N. J.) Poultry Association was held at Hackensack, Nov. 29 and 30. It was a very creditable affair. Over 1,000 birds were exhibited, and many of the specimens were very fine. The largest exhibitor was Mr. J. J. Berry, of Hackensack, who took first and second premiums for White Cochins, Light Brahmas, Plymouth Rocks, White Leghorns, and White Crested Black Polish. Some very fine Silver-Penciled Hamburgs, exhibited by Thos. W. White, of Ridgewood, took first and second premiums. J. C. and D. Pennington took first premium for some splendid Black Hamburgs. Some very excellent Plymouth Rocks were exhibited by D. Benedict, of Rossville, Staten Island, N. Y. Theexhibition was well attended and was a well deserved success.

To be had without Money.—There will be found upon our Premium List (see page 33) a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but little *well directed effort*. Among these are: **Beautiful Silver and Gold-Plated Articles—Magic Bell-Head and Charm Pencils and Gold Pens—Fine Table Cutlery—Pocket Knives—Children's Carriages and Toys—Swings—Clocks—Table Croquet—Pianos—Microscopes — Watches — Guns — Sewing and Washing Machines — Books, etc., etc.**—Read all of page 33, and see how easy you can obtain one or more of these good and desirable articles.

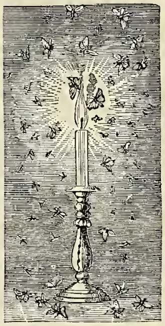
"The Farm-Yard Club of Jotham: An Account of the Families and Farms of that Famous Town," is the title of a work by George B. Loring, and published by Lockwood, Brooks & Co., Boston, Mass. Dr. Loring has long been prominent in agricultural matters in Massachusetts, and being President of the N. E. Agricultural Society, is widely known elsewhere. This work had its origin in a series of articles furnished by Dr. L. to the "Boston Globe," and while it presents a view of New England agriculture, also gives an insight into the social life of the farming community. How far those works, which aim to convey solid instruction under the guise of fiction, succeed in accomplishing their object, we are not prepared to say; if people would not skip all the useful part and pick out only the thread of the story, there would be no doubt as to the value of this method of instruction. The present volume should go far to decide this question, as the narrative is well sustained, the characters are well individualized, and so far as we have examined them, the teachings according to the best practice. To adapt the work as one of reference, and to suit the matter-of-fact people who do not care for the story, there is a separate index to the agricultural topics. The book is abundantly illustrated, and in the way of paper, printing, and binding, most creditable to the publishers. Pp. 603. Sent from this office by mail for $3 50.

Grape Culture.—Hyatt's Hand-book, by T. Hart Hyatt, San Francisco, Cal.: A. L. Bancroft & Co. Pp. 279, Price $2. The climate of the Pacific coast being quite dissimilar to that of the Atlantic side of the continent, allows of the open air culture of those varieties of grapes that here can succeed only under glass; hence a work on the culture of our hardy grapes would be of little use in California, and the need of a "Hand Book," especially adapted to the varieties cultivated in that very different climate. Mr. Hyatt, who has furnished such a work, has been a great traveler, and in his long sojourns abroad made himself familiar with grape culture in foreign countries, before he engaged in the pursuit on the shores of the Pacific. The extent of the grape interest in California is but one among the many wonderful features of that wonderful State. The number of bearing vines in 1876, is estimated at 40,000,000, and the number of gallons of wine at 10,000,000; besides there were 20,000 boxes of raisins produced in the State, showing that the manufacture of grapes into raisins is rapidly increasing. The work bears all through the impress of practical experience, and though especially intended for California, it contains much that will be of interest to grape growers in the States east of the Rocky Mountains.

Knight's American Mechanical Dictionary, by Edward H. Knight, N. Y.: Hurd & Houghton. This work, which is in three large volumes, is a cyclopædia rather than a dictionary. We received some of the earlier parts of the work when its publication was begun by another house, several years ago, and found those so useful that we have often wished that it might be completed, and were especially gratified to receive the final portion from the present publishers. The author, long engaged in the Patent Office, has expended 25 years of labor upon the work, and it is one of the most complete, as it is one of the most useful ever issued from the American press. It describes the tools, machines, implements and appliances used in every art, and gives an account of the processes and also the histories of the arts themselves. Its method of indexing and cross-reference is very complete, and adds greatly to its usefulness; one often misses the information a work contains through not knowing just where to look for it, a difficulty that is avoided here. The work gives very complete lists of technical terms, such as are not to be found in the usual dictionaries. One of the striking features of this dictionary is the profuseness of its illustrations. While the publishers state that there are 7,500 engravings, there are practically at least twice as many, as several forms are often given on the same block. The work is sold in 44 parts, or in three volumes.

Practical Botany, by Dr. A. Koehler, N. Y.: Henry Holt & Co. After a careful examination of this work we are unable to discover why it was written. Our views in regard to such works are, the author should either have something new to tell, or should tell the old story in a better form than had been done before. This work does neither.

Sundry Humbugs.



It is not necessary to set forth to our older readers the objects of this column, as too many of them have received useful warnings, or have been able through its agency to warn others. As the new year always brings its hosts of new readers, a word to them may not be out of place. The "Humbug Column" has long been a marked feature of the *American Agriculturist*; many years ago it began to notice such frauds as needed exposure, in separate items, but the number of these was found to be so large, and so rapidly increasing, that after a while these matters were brought together, and presented in a condensed form under the title given above. Its prime, and we may say,

ITS SOLE OBJECT

is to expose all designs that have for their object the defrauding the community at large, but more especially that portion of it in which the *American Agriculturist* finds the greater share of its readers—the farming, or rural community, as it is against these that a large proportion of these schemes are especially directed. We need not enumerate the many species of the genus Humbug. It appeals to the love of money, to the desire for health, to personal vanity, to the baser passions—in short, to every possible motive which will induce people to part with their money, for which they will receive in return something, which, if not absolutely useless, is positively harmful. Every scheme of this kind that has come to our knowledge, which we have good reason to believe to be detrimental to the intents of our readers and the community at large, has been thoroughly exposed, and held up as something to be avoided. Of course this cannot be done without resistance on the part of those implicated, and the suits that have been commenced against us are numerous. These cases have rarely reached a trial, probably because the lawyers of the complainants, on learning the particulars, have advised their clients not to appear in court. In a few cases that have been prosecuted to the end, we have not only been acquitted, but have received the commendations of both court and jury. We mention this to show how careful we are, while

PROTECTING THE COMMUNITY

from fraud, to be sure that we are right, and to let our new readers see, what our old ones already know, that it is of no use to send us unsubstantiated charges. It is very easy for one who thinks he has been defrauded, to write: "So and so is a fraud. I sent him $5 for such a thing, and have had no reply; show him up in your Humbug Columns,"—but if such correspondents reflect upon the matter, they will see how unjust it would be to hold up a man as a cheat, from one end of the country to the other, upon an unsubstantiated charge like this. Every accusation must be accompanied by abundant evidence, or by such details that will allow us to investigate it, before it can be made public. These columns are not to be used to set forth personal grievances, and unless the exposure of a case will warn others, it is of no use to make it public.....This time it is some one in Michigan, who is after the farmers with

"A NEW CEREAL."

We are told that it is of "South American origin;" that it has been "acclimated" in Michigan since 1872; that it will produce from 75 to 150 bushels to the acre, and that it is called "Pampas or Upland Rice." We add that it was "acclimated" before Michigan was even a Territory, much less a State; it did not originate in South America, and that it is not "Pampas" or any rice, or anything like rice. It is the same old thing turned up again, which a year or two ago was "Ivory Wheat," and was offered to our grandfathers as "Chocolate Corn," and has as many aliases as a confidence man. If people wish to grow "Durra Corn,"—which this is—we have no objection, as we doubt not it may be made useful, but we do object to putting old and well known things before the public under false names.

LOOK OUT FOR THE BOYS.

Last month we mentioned, though not in these columns, a case, in which the young son of one of our friends had all sorts of vile circulars sent to him; since then we have learned of a similar case much nearer home. The son of a gentleman connected with this office, a boy of some 12 years, seeing something advertised that struck his fancy, sent the required 10 cents, and received the article, which was satisfactory, and well worth the money. Soon after this circulars, and letters began to come to this boy from places, where the father knew that the boy had no friends, and this induced him to examine the matter that came by mail; he found it of the vilest character, not sent once, but frequently, and it keeps on coming. The original advertisement was a trap to get the name, and the address has evidently been passed about to several in the "trade." Parents should be on such terms with their children that these will have no correspondence that is kept secret, and they should, as a matter of safety, see that no matter reaches their children through the mails, which does not pass through their own hands. We can not give the names of the scoundrels who are engaged in this business, but if we are not mistaken, at least one of them, up on the Canada border, will find that he can not use the U. S. Post Offices for his purposes, and should he read this, he will exclaim "that's what's the matter."

MEDICAL MATTERS.

The circulars, pamphlets, and other documents, put forth by quack-doctors of all sorts, are so perfectly absurd to one with any knowledge of medicine, that we can hardly avoid treating them with ridicule. We feel that by showing up the thorough folly of their claims, we can better prevent people from giving them serious attention, than we could by any amount of reasoning. Still, after all, this matter of quack-medicines has its serious side, and there is much about it that is really pathetic and quite beyond ridicule. An honest physician says to his patient: "Your disease is beyond cure; you may live for months, or even years, but you can not hope for a cure. Medicine can do nothing for you, care and good nursing may do much. For me to continue my visits, would be a needless expense; care, nourishing food, and gentle exercise are all that you need, and these you can get without my aid." An upright physician often does this from the best motives, but we are sure that he almost as often makes a mistake; his visits, even if but twice a week, have been of the greatest importance to the patient; they have been looked to as great events; about the time when the doctor should come, he listens to the sound of every vehicle. When the doctor comes he brings a cheerful face, he listens to the story of every pain and ache, he says that this may be or may not be eaten; tells him some bits of news, such as so and so has received a lot of fine oysters, or that quail are now in season, and that he may have half a one—no more, every other day, and many other things of like import. The physician goes off leaving the patient feeling better, and he thinks for a day or two of what the doctor said, and the next day or two of what he will ask or tell the doctor, so that he is really much better in mind, at least, for the visits. When the doctor says that he shall come no more, the invalid is deprived of this pleasant excitement, and something must be found to supply its place. The patient reads the newspapers. He can, unfortunately, read but few in which his own case is not exactly described, and—of course—a sure cure offered. Then begins a trial of this and that quack medicine—most of them being stimulants of one kind or another, he feels better when he begins with one of them, the effect though soon wears off, and he tries another, which being a stimulant or anodyne in another form, is just the thing—for a while—and so it goes on—until the end. This is enacted over and over again in every town in the country, not by the poor and ignorant, for they cannot afford it, but by

REALLY INTELLIGENT PERSONS.

We received only a few days ago a letter, which in point of penmanship and composition is rarely excelled. We were told in touching terms of a sick friend, who wished to try the enclosed recipe, but first our advice was desired, and would we not reply immediately. We could see the whole at a glance, the last hope was hung upon this stuff. We saw how the mail was watched, and when at last our reply came, we could almost see the hope fade away as it was read. It was with a feeling of sadness that we wrote (the letter enclosed circulars from a Syracuse quack who had stolen the trick of Joseph Inmann) to this effect: "It is the old story: this Syracuse chap, from a 'sense of duty,' gives a recipe in which ingredients are given by names not known in medicine. Also from a sense of duty, knowing that these names are not known in any drug store, he has the stuff put up, which he will sell at a round price," and stated that we could not advise the venture. Such cases occur frequently in our correspondence, and are sometimes brought to our notice in

PERSONAL INTERVIEWS.

Not long since a stout, hearty, honest-looking young man from the country, called on us. His story was, that he had sent about $20 to some quack establishment in this city, having been prompted to do so by his kindly desire to benefit a poor but worthy friend who was on a sick bed, and in reference to whose case the quack circulars that he had received made, as they always do, the most definite promises of cure. The money was sent, sundry bottles of "stuff" were received, but his poor sick friend was his poor sick friend still, and now he was trying in vain to get his money back, or some kind of satisfaction. "Could we help him in any way?"—"Do you see and read the *American Agriculturist?*" we asked. —"I see it, for my mother takes it, and thinks everything of it, but I am sorry to say, I haven't read it as I ought to have done."—"Didn't you know that there was a chapter there every month entitled 'Sundry Humbugs,' designed to protect just such honest, and well-meaning, but too credulous persons as yourself?"—"Well," said he in a regretful, self-accusatory way, "my mother *did* tell me I'd better send to you *American Agriculturist* folks, before letting my money go, but *I thought it was all right.*" As the poor fellow stood there evidently as much grieved at his failure to help his sick friend, as at the loss of his own hard-earned money, it was a pitiable case. But what could we do? Money thus lost is never recovered. Poor fellow, we could only give him a few friendly words, and he went home if a sadder, a wiser man. He "*thought* it was all right," as unfortunately do many, when the promises second their hopes. We can give our friends no better New Year's advice, not only not to believe the pretensions of the numberless "medical" circulars that are cumbering the mails, but to not even read their claims, as they excite hopes that can never be realized, and what is of less consequence, their whole end and aim is money, which, once parted with, can never be regained.

* * *

Experimenting with Fertilizers.—The writings of Prof. Ville in Europe, and in this country of several who have claimed great results from fertilizers made by certain formulas, have induced in many of our more intelligent farmers a desire to experiment in the same direction. When told that a given formula must contain so much of ammonia, potash, phosphoric acid, lime, etc., they are at once met by the great expense of these in a pure or separate state, and they are at loss to know how they can buy them in the cheapest and most available forms. To meet this want Mr. C. V. Mapes has prepared circulars giving very full information on these points, showing the cost per pound of the above named constituents in the various forms in which they are to be found in commerce. Thus, potash in one drug may cost the farmer 13c. per pound, while he may buy it in another form at 7c., and so with ammonia and the rest. To further aid experimenters he gives the proportions of each of these constituents in each of the leading farm crops, not in percentage, but reckoned in bushels or tons. Mr. M. also furnishes the formulas given by Prof. Ville, and much other useful information in a compact and popular form.

The Forest and Stream Hand-Book for Riflemen, by Major Geo. C. Starr, N. Y.: J. B. Ford & Co. Rifle-shooting as a recreation, and a useful and interesting one, is increasing with wonderful rapidity. Those about to form clubs will find in this little handbook full directions for organization, for outfit, and for regulating their matches. Directions are given for choosing and using a rifle, a list of the existing rifle-clubs in the country, and much other useful matter, and illustrated with maps and engravings, all in a compact pocket volume of 64 pages, and sold for 50 cents.

Fairmount Park—A Good Appointment.—New Yorkers are at present justly concerned as to the future of Central Park, and pending the quarrels of officials, are deprived not only of many facilities for recreation, but the well keeping of the Park appears to be in danger through the lack of money to pay the laborers. At the same time Philadelphians may congratulate themselves that their beautiful and extensive Fairmount Park is in the control of a harmonious Commission, which is constantly working for the improvement of this grandest of public play-grounds. The design of this park does not demand so much aid from art as that of Central Park, yet there must be more or less done in opening views, planting, etc., and it is desirable that there should be a harmony of design throughout. With a view to this end, the Commissioners have appointed Chas. H. Miller, Esq., as "Consulting Landscape Gardener." Mr. M. is of the firm of Miller & Hayes, Mount Airy Nurseries, Philadelphia, and was the Chief of the Bureau of Horticulture at the Centennial Exhibition. A large number of country seats in the suburbs of Philadelphia, and the telling effects produced with very limited materials on the Centennial grounds, afford abundant testimony as to the fitness of Mr. Miller for the new and responsible position to which he has been chosen, and we congratulate the city of Philadelphia on having here the right man in the right place.

Text-Book on Veterinary Obstetrics.—We have received the third part of this work, to which we have previously referred. This part, which occupies over 60 pages, describes the anomalies of gestation and the accidents of pregnancy. Amongst the latter, abortion is treated of to a considerable length, and in an interesting manner. Breeders and dairymen, who have suffered serious losses of stock from this cause, will be greatly interested in the history of this malady, and the explanation of its causes, its prevention, and the treatment, as given in this part.

The Jerusalem Artichoke—Where is it from?

The "Rural New Yorker," in a useful article upon the agricultural value of the Jerusalem Artichoke (*Helianthus tuberosus*), says that it is "found growing wild in Brazil." This positive statement as to a long doubtful point, induces us to ask our cotemporary by whom was it found? If it has some recent information in the case, it should give it for the benefit of others. Humboldt did not find it "wild" or in cultivation in any part of Brazil or other part of South America, nor did Von Martius, whose "Flora of Brazil" is one of the most elaborate of botanical works, meet with it; in fact, up to the present time, there is—unless our friends of the "Rural" have it—no evidence whatever that it was brought from Brazil, or was even ever seen there. That its Brazilian origin is given in various works is true, for it is very common for an error to be copied by one after another, but it is not stated by authors who, in recent years, have investigated the matter. It is given by Parkinson (1640) under the general head of Potatoes, and is figured as *Batatas de Canada*. Linnæus first mentions the plant in "Hortus Cliffortianus" (1737), and accredits it to Canada, though in his later works he, for some reason, changed it to Brazil. In those days geographical boundaries were very indefinite, and Canada was apparently nearly all of the present United States, not included in Virginia. There is not only no evidence that the plant was brought from Brazil, or that it now exists there, but there is no *Helianthus*, or Sunflower, nearly related to it found there, they being all natives of Mexico and the United States. It is true that this is negative testimony, but it is strengthened by the fact that the Jerusalem Artichoke is quite hardy, even in New England, which tells against its Brazilian origin, and would, were it from that country, stand alone as a tropical plant hardy enough to endure our severest winters. As we have shown that the probabilities are strongly against the accuracy of the "Rural's" statement that the plant "is found growing wild in Brazil," it will no doubt, and properly, ask where it did originate. Here also we can only give the probabilities. There is one of our wild Sun-flowers—*Helianthus doronicoides*—which grows from Pennsylvania and Illinois, southward, and is quite abundant in the southwestern States and the valley of the Mississippi; this produces, in its wild state, long tubers, so like those of the Jerusalem Artichoke as to suggest that they are its wild parent. The tuber-forming habit of this species is not an accidental thickening of the root-stock, as it has been noticed several times in the wild plant, and is held by specimens cultivated in botanical gardens. The plant itself is so like *H. tuberosus*, that Gray, in his last edition of Manual, says in speaking of it: "This is probably the original of *H. tuberosus*, the Jerusalem Artichoke," an opinion in which he has since been so strongly confirmed, that he says he has "no doubt" of it. The historical evidence that the aborigines cultivated the plant is lacking; but from what we do know of their agriculture, and the well established fact that they had different varieties of squash or pumpkin, and corn, it is not improbable that they cultivated the Artichoke; indeed, a recent writer, though he does not give his authority for the statement, enumerates "Sun-flowers" as among the plants grown by the Indians. A plant so hardy and cultivated with so little labor, is one that would especially commend itself to their rude agriculture. As to its introduction into Europe, it may have been taken to France by the way of Canada, or to Spain by the way of Florida, as both countries had settlements in those parts of the new world three quarters of a century before the alleged date of its cultivation in Europe. If any of our readers in the Indian Territory have any information, traditional, or otherwise, bearing upon the use of this plant by their remote ancestors, we hope they will contribute it, and help clear up the history—now rather obscure—of this useful plant.

Basket Items continued on page 33.

Danger to Horses in Connecticut.

The State Board of Agriculture of Connecticut—much more efficient than such bodies often are—should investigate and make public the facts concerning a plant which is dangerous, and even fatal to horses, as alleged by a citizen of their State, in papers published in the adjoining commonwealths of Massachusetts and New York. This should be done, not only as a matter of great importance to farmers and other horse-owners, but as one of scientific interest, as the plant to which these dangerous qualities are attributed, has not heretofore been known as poisonous, nor has it previously been found in New England. A knowledge of the useful or deleterious qualities of plants, especially those which grow spontaneously, is important to the farmer, but it is very essential that this knowledge should be accurate. Mr. W. H. White, of Connecticut, a copious writer for some agricultural papers, published in the "N. E. Homestead," in 1873, an account of the poisoning of horses by the "Horse-tail," *Equisetum arvense*, a plant which has the reputation of being injurious; in the same article Mr. W. mentioned that another plant, popularly known as "Mares-tail," *Hippuris vulgaris*, was fatal to horses. We at the time pointed out the probability of an error in this case, *Hippuris* being an aquatic, and an exceedingly rare one. To this Mr. W. replied, averring the abundance of "Mares-tail" in the Connecticut Valley, and that more of it grew upon "moist land" than did in the water. That the plant known to him as "Mares-tail" might possibly not be *Hippuris*, does not seem to have occurred to Mr. White; it would not be a difficult matter to determine what the plant is, as any botanist would willingly examine it for him, and he need not go outside of his own State to find some of the most skilled botanists in the country. He seems to be quite satisfied with the accuracy of his own knowledge, as he persists in his assertion, which is repeated in the "Country Gentleman," for Nov. 30th, last. He says; "*Hippuris*, 'Mare's-tail,' although Prof. Gray says it grows in water, I have seen growing in moist ground; it is a poison which proves fatal to horses, and it may be barely possible it can be mingled with hay."—Several points suggest themselves as desirable for the Board to investigate.

(1) Does *Hippuris* grow at all in Connecticut?—Mr. W. says it "is found in many towns lying contiguous to the Connecticut River, from Hartford up to Vermont."—It is very strange that no one else has observed and recorded it. A few quotations will show how rare it has formerly been considered. In his "Flora," (1824), Doct. Torrey stated: "The only American locality for this plant, with which I am acquainted, is that near Schenectady." Later, (1840), Torrey and Gray, in their "Flora of North America," say: "This plant is very uncommon in the United States."—Prof. Gray in his "Manual," (1867), gives for its localities: "New York to Kentucky, and northward; rare."—If the plant, heretofore regarded as a botanical rarity, has made an irruption into the Connecticut Valley, and suddenly become abundant, it is an interesting fact in the distribution of plants, and should be authenticated.

(2). All American authorities, as well as those of Europe, (where the plant is much more frequent than here), describe *Hippuris* as growing in the water, either wholly submerged, or with the tips rising out of the water; the only time we ever found it, the plant was wholly under water. Mr. White asserts that he has seen "more on moist land, not ponds or springs, than I ever saw growing in water."—Here is another point of interest; if this statement is verified, we have a capital illustration for the advocates of the development doctrine—a plant which everywhere else is aquatic, is in the Connecticut Valley on its way toward becoming a dry-land plant; it is being already more abundant on moist land than it is in the water. The plant should be watched, for the Mares-tail may, on dry land, develop into a Colt's-foot or a Horse-mint.

(3). Still more important is it that the Board should ascertain whether *Hippuris* is really, as alleged, "a poison which proves fatal to horses." If the plant is as abundant as stated, it is a matter that can not be too soon determined, and the facts made known. The Board should have no difficulty in procuring evidence in this matter, as Mr. W. says in the "N. E. Homestead": "and as for its growing in Vermont, and horses eating it and being poisoned, or dying after having eaten it, I have the authority of the farmers who have lost their horses in that way."—Aside from the practical importance of this question, it will be, if established, an interesting addition to our knowledge of the plant. No others of the family to which *Hippuris* belongs, are known to have poisonous or other active qualities; this, however, is no proof that the little known *Hippuris* may not be dangerous, as cases exist in other families of one member being poisonous, while all its kin are harmless.

(4). Perhaps the most direct way of coming at the matter, would be to ascertain what plant, abundant in the Valley of the Connecticut, besides the Horse-tail, (*Equisetum*), has the reputation of being poisonous to horses. As the most careful sometimes make mistakes, it is just possible that it may not be *Hippuris* at all; but it is none the less important to find out what the plant is, and what foundation there is for the statements that have been so widely published. When the plant is identified, and it proves to be something not familiarly known to our readers generally, and one that we have not recently illustrated, we shall be glad to publish its portrait, in order that it may be recognized and avoided.

Some Popular Breeds of Poultry.

The agricultural interest owes much to poultry fanciers. Those who devote their attention to fancy poultry are too often misunderstood by farmers, as well as by others. As in many other cases, where people devote themselves to some special pursuit—or hobby, as it is considered—the poultry fanciers are generally looked upon as enthusiasts, who simply amuse themselves, without conferring any benefit upon the public; an error which does the poultry breeder great injustice. In nearly every farmer's yard may be seen either some pure-bred or some crossed fowls that are much superior to the ordinary run of "barn-door" poultry. The common fowls may weigh two pounds at maturity, and may lay two or three dozen of eggs in the summer, and none in the winter. But the improved fowls, now kept by the majority of farmers, will reach an average weight of four pounds, and produce eggs, if not in the winter, at least very early in the spring, and continue late in the fall. The product of flesh and eggs is at least doubled. This result is due to the labors of poultry fanciers, who have ransacked the world for new varieties, until perhaps there are none worth having that are not now to be found in this country. The Light Brahma, the most generally popular fowl at the present day, we owe to an American poultry fancier, Dr. J. C. Bennett, of Great Falls, N. H., who exhibited a pen of them at the Fitchburg Poultry Show in 1850. Dr. Bennett procured these birds of Mr. Cornish, of Connecticut, who obtained them from a Mr. Chamberlain, and he purchased them from a sailor who brought the original fowls from India. This at least is the statement given in Wright's Monograph on the Brahma Fowls, published by the Orange Judd Co. We therefore owe the Brahmas to the American poultry fanciers, and since they started the breed on its way to popular favor, it has been improved, and now stands first in numbers and value of all our poultry. In like manner the very popular Leghorns have been introduced and improved, and now we have a new and most promising breed coming into favor, which we owe entirely to the fanciers, and that is the Plymouth Rocks. All these are fowls of general utility, valuable for their flesh and eggs. No one can become a successful breeder of poultry—indeed one can hardly succeed in any thing—unless he is an enthusiast; therefore enthusiasm, when usefully directed, is something to be commended rather than blamed. The profit derived by farmers from poultry, is now an important item in their income. The total product of fowls and eggs cannot be less than from 150 to 200 millions of dollars annually, and nearly the whole of this should be credited to the enthusiasm of poultry breeders, through whose labors it has been made possible. We would, therefore, advance the improvement of poultry by encouraging those who make it the business of their lives, and every farmer should visit the poultry exhibitions, and see that his wife and children take interest in them.

We give on our front page portraits from life, of some choice fowls that have been recently exhibited. The central figures are portraits of a pair of Light Brahmas, bred and owned by Mr. J. J. Berry of Hackensack, and which took the first premium at the Bergen Co., N. J., Poultry Exhibition. At the right of these are a pair of Plymouth Rocks, bred and owned by Mr. D. Benedict, of the Staten Island Poultry Farm, Rossville, Staten Island, N.Y. They were also exhibited at the Bergen Co. show. This breed is rapidly coming into favor as excellent layers, heavy bodied, hardy, and well-fleshed fowls. Their plumage is bluish-speckled, and very pleasing, the cock is somewhat lighter in color than the hen; the legs are yellow and without feathers. A flock of these fowls is a very attractive ornament to a well kept yard, and they promise to become a very favorite farmers' and amateurs' fowl. On the left is a pair of White Dorkings, bred from stock imported from England by Mr. Wm. Crozier, of Northport, Long Island, N. Y. At the bottom is a trio of Sumatra Game fowls, bred from imported stock, by Messrs. Benson & Burpee, of Philadelphia. These are very handsomely plumaged birds, the cock magnificently colored, and the hen jet black, with brilliant green reflections. They are great layers. These birds were exhibited at the Centennial Poultry Show, as were also the pair of Sultan fowls, whose portraits appear on the upper part of the engraving. These birds are white, with legs feathered to the toes, and with large crests. They came originally from Constantinople, where they are kept in the Sultan's palace, and are therefore called the Sultan's fowls. They are probably more curious than useful. The active competition amongst poultry breeders has tended to reduce prices for choice fowls to a very moderate figure, so that every farmer can now afford to procure a few birds wherewith to improve his common stock.

Bee Notes for January.

BY L. C. ROOT, MOHAWK, N. Y.

While bees are left in perfect quiet, as they should be during the present month, the beekeeper may be active in gaining information, preparing hives and boxes, and in other ways making ready for the coming busy season.

From the many communications I have received, I conclude that the "Notes" for Jan. '76 were of general interest, as at this season the question of "what hive to use" is receiving attention. I find from inquiries that I did not make some points so clear as I intended.

Standing or Hanging Frames.

A correspondent says: "I have referred to your Notes in the Jan. No., '76, but cannot learn from it, whether you prefer the standing or hanging frame of the Quinby Hive."—I am aware that three hives are known as the "Quinby Hive," they having been made, used, and recommended by him. In speaking of his last hive, I should have called it the "New Quinby Hive." This is the hive with standing frames, described in the Notes referred to. He farther says: "The point I am particularly interested in, is to know which of these two kinds of frames you prefer, with your reasons for changing from suspended to hanging frames, if you have done so."—The new Quinby frame is made as follows: The ends are 11½ inches long, 1⅛ in. wide, and ⅜ in. thick. Top and bottom pieces are 18½ in. long, ⅞ in. wide, and ½ in. thick. If the combs are to be built directly in the frames by the bees, a triangular piece, 18½ in. long, (fig. 1), should be placed under the top bar as a guide; but if combs are to be transferred to them, from other hives, a simple corner block, (fig. 2), is all that is necessary to stiffen the frame. The top and bottom pieces are nailed ¼ in. from the top and bottom of the end pieces, and being narrower, at equal distances from each edge; a hook on the bottom of one end, made of a piece of hoop iron, will support the frame in a standing position. This makes, when completed, a frame 11½ x 19½. in. If a smaller frame is desired, it may be made shorter. I describe the frame that I may more clearly give my preference for the use of the same, as well as to answer some inquiries as to its construction. The principal advantage of this frame over the hanging frame, is the fact that one or more frames may be placed together, making a perfect hive without the necessity of the outside case. I have only to place them on a small bottom board, with the panels at the sides, and a mat or board on the top, they

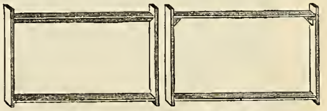


Fig. 1. FRAMES. Fig. 2.

form a complete hive. The past season I have increased my stock about 60, using only the closed end frames without the outside case or hive.

With the hanging frame, if you desire to use only one frame to rear a queen, a hive must be used to hold the frame. Another advantage is manifest when we come to place the hives in winter quarters. Only the frames need be removed to the winter repository, which renders the package light, and easily handled.

Hives that will accommodate the requisite number of boxes in a good season—or the necessary supply of frames for extracting, must certainly be unwieldy to handle, and occupy too much space. Hives with hanging frames cannot be handled without the outer case, and if a special one is made for winter packing, it involves unnecessary outlay. Then, too, when bees are removed to their winter quarters, it is very important that all about them be dry. It will easily be seen that when the case is left on the summer stand, no snow or dampness can have touched the frames.

Straight Combs.—Our correspondent asks again: "Is it as easy to secure straight combs in the hanging as standing frames, and if so, should the bottom of the hanging frame be held in place, as described in Mr. Q.'s book?"—Straight combs may be secured as easily in one as the other. Frames in all hives should be held firmly in place by some device or other. No hive with frame hanging loosely would be practicable to handle.

Roofs.—A good roof for each hive is indispensable, and the winter months afford ample time to make and paint them well. The one shown in figure 3 is in most general use, yet the other, figure 4, is, for some reasons, preferable. The roof described in fig. 4 is made as follows; cut three cleats, *a*, 6 in. longer than the width of the hive. Then cut ½-in. boards, *b*, 6 in. longer than the depth of the hive from front to rear. Nail the boards to the cleats as shown in the cut, placing the middle cleat about one-third of the distance from one end, and nail battens, *c*, over the cracks. This will make a roof projecting three inches over all sides of the hive. It will be seen that the middle cleat will rest on the hive near the front, and the rear one will hang over the back of the hive, giving the roof the desired slant. This form of roof is adapted to all styles of hives, but especially to those that are broader than deep, while that shown in fig. 3 is better for long and narrow hives, and carries the water off at the sides. With this style of roof, the water may all be carried to the rear of the hive. In case of a sudden dash of rain, when bees return hastily to their hive, they are not hindered by the dripping of the water before their entrance.

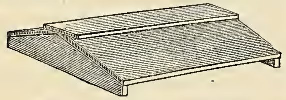


Fig. 3.—SLOPING ROOF TO HIVE.

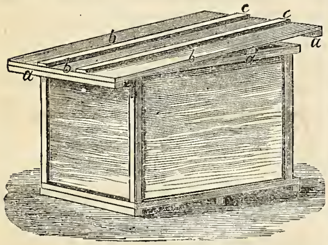


Fig. 4.—FLAT ROOF TO HIVE.

When to Purchase Bees.—Mrs. A. N. N., of Rockford, Ill., asks: "Would it be preferable for me to purchase bees at this season, or in early spring?"—I always advise purchasing bees in spring. Beginners, especially, should purchase at that time.

Ogden Farm Papers.—No. 83.

BY GEORGE E. WARING, JR.

Frequent reports have recently been made concerning "Prickly Comfrey" as being a valuable plant for soiling cattle, yielding an enormous amount of green forage (said sometimes to exceed one hundred tons per acre), the leaves being removed from time to time during the season. It is a native of the Caucasus Mountains, and withstands the coldest climates. Analysis shows these green leaves to contain more than 10 per cent of nutritious matters, which is certainly a very high proportion—as much as the beet and cabbage. It is highly commended as a forage plant in England, and has been introduced with success in this country. Not only does it withstand extreme cold, but it seems to thrive remarkably well under the dry climate of our Southern States. In Virginia, plants set out in April, and growing near corn, which had withered with the drouth, gave at that time a supply of five to seven pounds of fresh green fodder to the plant. The leaves may be cut or pulled, and the cropping may be continued until heavy frosts. When a good top-dressing of manure is given to the ground, the Comfrey leaves are the first product of the soil in the early spring. Like all heavy yielders, it is of course a heavy feeder, and must be manured very abundantly. Indeed, it is peculiarly a *high farming* plant. It will pay much better to grow one acre with fifty loads of manure, than ten acres with five loads of manure to the acre.

It is planted in hills three feet apart each way, and may be planted even late in the autumn. Dig a hole deep enough to receive a large shovelful of manure, without filling it nearer than within two inches of the surface. After the heat has passed from the manure, place the set directly upon it, and cover it with about 3 inches of earth. As soon as the weather is warm enough for any vegetable growth, the plant will start rapidly. The only future treatment needed, is to keep the ground free from weeds, (which may readily be done by cross-cultivating), and giving it a heavy top-dressing every autumn. It is claimed that with sets planted in the autumn, the yield per acre of the first season will be 20 tons of green leaves, of the second 50 tons, and of the third from 80 to over 100 tons. This seems a very large story, but I hope in time to report the results of my own experiment.

Dr. Vœlcker's analysis is as follows:

	Leaves.		Stem.	
	In Natural State.	*Calculated Dry.*	*In Natural State.*	*Calculated Dry.*
Water	88.400	....	94.74	....
Flesh-forming substances	2.712	23.37	.69	13.06
Non-nitrogenized substances:—				
Heat and fat producing matters.	6.898	59.49	3.81	72.49
Inorganic matters (ash)	1.990	17.14	.76	14.45
	100.000	100.00	100.00	100.00

This analysis would give a produce of actual nutritious matters amounting to at least 10,000 lbs. per acre, for a green crop of 50 tons, equal to the nutritious matter of 15 tons of the best hay, and would be fully equal to 50 tons of corn-fodder.

If it is true that this new comer has anything like the advantageous qualities accorded to it, it will be a most valuable acquisition, especially to those who stall-feed their cattle during the summer months.

A correspondent in Wisconsin, referring to former accounts in these papers of our experience in steaming food, asks whether it proved a success. He has an 8-horse engine used for sawing lumber. This he proposes to use for grinding corn, cutting fodder, and steaming the mixed food. We steamed all of our fodder—or nearly all—from 1868 to 1873, and found a decided benefit in doing it, as during this time we had to buy a very large part of our forage, and had a great quantity of corn-fodder saved for winter use, (cured and left in the field.) Since 1873 we have raised nearly all of our hay on the farm, and our corn-fodder has—now from rain, now from the army-worm, and now from drouth—failed to furnish any excess for winter use. Our home-grown hay was cut early and stored in the barn. It was sweet, palatable, and nutrititous, and would have been but little, if at all, benefitted by cutting and steaming. When we steamed corn-fodder and poorer purchased hay, we found that we got the same effect from it that we did when we used our own hay unsteamed, and the effect was not sensibly improved when we used our own hay in the steamed mixture. This indicates that the result of steaming late cut, or poor hay, is to bring it more to the condition of good hay; and that really good hay—young, tender, and sweet—is not materially improved by steaming. Probably the cellulose in good hay is naturally in a condition to be digested by stock, while that in poor hay is too much hardened by age, and needs the softening action of cooking to make it digestible. Then, too, any *slight* taint of must or mold, which would cause cattle to refuse the hay, is corrected by steaming, and the appetizing flavor of the meal or bran added to the mixed fodder, is diffused throughout the mass, and causes it to be eaten more readily. The hard stalks of corn, and the harder kinds of straw, are made more tender, and their nutritive parts become more readily available. To sum up the case: all inferior food is made enough better by steaming to pay any reasonable cost of the operation, while *good* food is already so good that it does not receive enough improvement to make steaming profitable. In such a case as is indicated by my correspondent,—where the power for cutting, and the steam for cooking are already secured, and when it would consequently be only a question of keeping up the fire a little longer, the cost would be so much reduced as to make it economical to steam under conditions where it would not pay if the operation had to bear all of its own costs. Then, on the other hand, it must be remembered that the experience at Ogden Farm was with coal at $8 to $10 per ton, hay at $16 to $22 per ton, and corn at 75 cts. to $1 per bushel. In Wisconsin fuel would be cheaper, but labor would cost about the same as here, and the fodder, on which the saving is to be made, would be so low in cost that the actual saving would amount to very much less. If the quality of the hay is really *poor*, then steaming would be more important, with a view to the condition of the stock. I am asked where my writings on this subject can be had. The best will be found in the Ogden Farm Papers for 1868 to 1873, and in "The Handy Book of Husbandry," which the Orange Judd Company sell.

Incidentally to our use of corn-fodder for winter steaming, we hit upon the following plan for curing it, which seems worth repeating for the benefit of newer subscribers to the *American Agriculturist*,—and to refresh the memories of old readers. We plant in rows, about 3 feet apart, and if we have good luck, the corn stands about 6 to 7 feet high over the field,—a solid sea of green. When it is well advanced in tasselling, we cut it up and bind it into small stooks, well secured at the top, and well spread at the foot. After every high wind we go over the field, and set up and bind anew all stooks that have been disturbed. In this condition we keep it until hard weather sets in in November. Then we cut each stook loose by cutting up its still rooted members, bind it firmly around the middle, and gather it into very large stooks,—say six small ones being made into each new one. This is set up very securely, and bound as tightly as possible at the top, so tightly that there is but little chance for the weather to get in at this vulnerable point. Such stooks, from their size and compactness, need very little attention, and they are good to withstand any weather. We have generally used the last of ours late in February,—hauling them in as they are wanted for steaming. The very outside of the stook is somewhat weathered, but all except this, (probably 95 per cent of the whole), is in good condition, and is in my opinion,—and in the opinion of my cows,—as good as good hay. The quantity is, of course, very much more than any crop of hay from the same area,—I should say fully six tons per acre, if not more.

Mr. Hardin, of Kentucky, has his little joke in the "Country Gentleman" about my getting up in the night to fire-up and keep the frost out of my dairy. Fortunately it is only a joke, for we never have freezing weather inside of our milk-house. The hot-water pipes take care of that,—and they were not so stupidly provided for that they can't be trusted to keep hot all night. He says he is not so much a *deep* setter as a *cold* setter. He sets as deep as I do, and my milk is often as cold as his can be,—I have found it considerably below 40° at times. Then he advances the amazing idea, (and advances it with an authority which ought to be based on more knowledge than any one probably has), that much more butter may be made from milk set at

40° than at 50°. I have not his article before me, but this is the spirit of it,—only he makes it some definite quantity for some definite degrees. I should be sorry to use impolite language, but it may do to intimate that his enthusiasm has got the better of his judgment. *All* the cream that is in the milk will rise,—in good condition,—from milk set at 50°, and surely the lower thermometer will not put any more into it. Mr. Hardin has hit on an easy way by which those who cannot command the cold water for good deep setting, may avail themselves of the advantages of the deep system. If he will confine himself to this,—or to as much as he can prove,—he will build up a good business.

Mr. Hardin complains that in my calculation of the amount of ice needed for his milk refrigerator, I say that he recommends reducing the temperature to 40°, when he really recommended 49°. (He might have made it 50° for short.) I was misled by his reliance on the endorsement of Mr. Carter of the Pennsylvania Experiment Farm, who suggested 40° as desirable—as I, myself, think it is. Still, justice to Mr. Hardin requires that his own figures be given.

S. W. McKibben, of Augusta, Ky., referring to my account of the 1st Prize Jersey Cow at the Centennial Cattle Show, (18 years old and still in full vigor), tells of a cow of his own, which is worthy of honorable mention. She is an imported Jersey, *twenty-three* years old, fawn and white in color. She has had 15 calves since she was imported 15 years ago,—the last one in July. She is now giving something over 8 quarts of milk per day. He complains that under the rules of the Jersey Cattle Club, she cannot be entered in the Register. The answer to this is, that no Herd Book in a large country *can* be a record of quality. *Pedigree* is a matter of record, —quality is a matter of standard. No standard can be applied without the personal attention of the same person, or set of persons, and in this country this would not be possible. If we undertook to record the quality of the animals we register, the book would lose its value, and would become a tool in the hands of dishonest and unscrupulous breeders.

I am asked by a former correspondent in Maine to answer the following questions: (1.) In manuring a crop like corn, it has been our practice to manure in the hill, as well as to spread: how do you manure corn?—(2.) What is the best way of applying lime and salt to the land?—(3.) How should manure be applied to the garden?—(4.) Does it pay thoroughly to underdrain common lands?—(5.) Is there much benefit to be derived from spreading swamp muck on the soil or grass-land?

1. I should spread all of the stable manure intended for this use on the sod in the autumn or winter, and turn it under in the spring. If I wanted to use only *a little* of some special fertilizer, I should put it in the hill. If much were to be used, I should put a little of it in the hill, and spread the rest broadcast, just before the first hoeing.

2. Dissolve the salt in as little water as will take it up, and use this water to slake the lime. Then spread the slaked lime on the surface of the ground. If on plow-land, after plowing.

3. With a large shovel, from a large cart, and with the *eyes shut*—for rich is still not rich enough for profitable market-garden culture.

4. That depends. Thorough draining is costly. If the common land is to have only a poor sort of common farming, it will not pay. If it is to be treated in all respects in a thoroughly good manner, the draining of one acre will pay even if you have to sell two acres of common land to cover the cost. That is to say: one acre of really good drained land, well farmed, will pay better than three acres of poor wet land well farmed. If the method of cultivation is to be slip-shod and bad, then the draining will *not* pay. Good draining is only one step in a progress where every step must be well taken. We must not raise a good crop of hay and then let it spoil in curing, and we must not spend money to get our land ready for good farming, and leave it to travel its own road to the dogs.

5. Some,—more or less according to circumstances,—but I fancy that the benefit is more often less than the cost than many have supposed.

Science Applied to Farming.—XXV.

BY PROF. W. O. ATWATER.

Cotton Seed as a Fertilizer—Superphosphates.

Mr. C. W. S., of Miss., writes: "The loss to Southern Agriculture in the bad management of *Cotton seed* is many millions of dollars per annum," and inquires as to the best method of treating the seed for a fertilizer. He says that "if it sprouts on the land, it seems to lose all its nitrogen. It is therefore usually exposed to the weather in heaps, until it heats, and is killed. Heating seems to be essential to the forming of ammonia, but by this process the ammonia escapes nearly as fast as it is formed. Then the spot where the heap was deposited, is so overcharged with ammonia that it produces nothing but straw or stalks the first year following."—He speaks of the plan of composting with earth as excellent, but troublesome and expensive, and inquires if it would not be well to treat it with sulphuric acid, to fix the ammonia, and render the phosphoric acid, potash, and other ash ingredients more available.

This letter is of a sort that I like to get. It shows evidence of thought, and its inquiries are to the point. But let me, first of all, correct a misapprehension as to nitrogen and ammonia, frequently found in agricultural literature, and of which traces are seen in this letter, namely, that all the nitrogen of plant food must change to ammonia, before the plant can use it. The compounds of nitrogen, which occur in fresh vegetable or animal matter, in cotton seed or hay, blood or meat, are not, as such, fit for the use of the plant. They have first to undergo changes, by fermentation, putrefaction, and other forms of decay, in which the nitrogen enters into new forms of combination, and such as the plant can use. One of these, and one of the best for the plant, is ammonia; another, equally available, is nitric acid. There are other nitrogen compounds, no one knows exactly what, or how many, which plants can appropriate as food. It is not necessary, therefore, that the nitrogen of cotton seed, or of any other fertilizing material, turn to ammonia, before it becomes available. But when the seed rots, more or less will change to ammonia, and, unless some means is taken to prevent it, much of the volatile ammonia will escape as gas into the air, and be lost. And if the heap is exposed to the weather, the rain will dissolve out ammonia and other nitrogen compounds, and carry them into the soil, so that, as Mr. S. says, the soil where the heap stands will be overloaded with nitrogenous plant food, and plants grown on it will be apt to run to stalks or straw, and yield relatively little seed. Putting on dilute sulphuric acid would change the ammonia to sulphate of ammonia, which, being not a gas, but a solid, would not evaporate. But the acid would do very little toward rendering the mineral ingredients, potash, phosphoric acid, lime, etc., available in cotton seed, or any other similar vegetable material, nor would it hinder the nitrogenous or other compounds in the least from being washed away by water. Indeed, there is no other way by which the fertilizing ingredients of the cotton seed can be so efficiently or cheaply changed into forms fit for the use of the plant, as by the natural processes of decay. And if these processes are rightly managed, there will be no loss of valuable materials. What is wanted is a means for absorbing and retaining the ammonia, and other available compounds, as they are formed, and preventing their loss either by volatilizing or leaching. I have no doubt that, generally speaking, the cheapest and most efficient way to accomplish this, is by composting with either stable manure, earth, or some other appropriate material. As absorbents, muck, vegetable mold from forests, and earth, are excellent. The plan of composting cotton seed with stable manure would seem from the chemical standpoint to be very good indeed. I notice that it is very highly recommended by the Department of Agriculture of Georgia, some of whose formulas and directions for composting cotton seed with manure, superphosphates, and other materials, are given on another page.*

While writing the above, a friend happened in, whose early life was spent in South Carolina. In speaking about the waste of cotton seed, he mentioned a plantation near his own home, where a pile of cotton seed, "as large as a moderate-sized barn," had accumulated during a series of years, and of which no use was ever made. I have a very vivid recollection of a long winter evening's talk I once had at the house of a friend in Tennessee, one of the largest and most substantial farmers in his region. He bewailed bitterly the lack of material to bring up his exhausted lands. What with the original cost of artificial fertilizers, and the expense of freight from the Atlantic cities, their use on his place was a questionable economy. The next morning we were about the barns, and noticed that no means whatever were taken to preserve the manure there made. It lay scattered about on the ground, to be trodden over by the stock, leached away down the hillside by rains, or escape into the air, and thus be lost to the farm.

In Circular No. 12 of the Georgia Department of Agriculture referred to, is the following:

"That it is entirely practicable to fertilize well with compost, every acre of land cultivated in Georgia, at an average outlay of $10 per ton for material not made on the farm, has been demonstrated experimentally. Each mule or horse, housed at night through the year, and fed in the stall, will deposit, with moderate bedding, one and a half tons of excellent stable manure, which, using 750 pounds to the ton, will be enough of that ingredient for four tons. Each mule will make five bales of cotton, (an average,) which will yield 150 bushels of cotton seed. After reserving 50 bushels for planting, there will remain 100 bushels, or 3,000 pounds, for manurial purposes, which, using 25 bushels, or 750 pounds to the ton, will, with the 750 pounds of stable manure, make 6,000 pounds or 1,500 ponuds of each of four tons. Now add 2,000 pounds of acid phosphate, or 500 pounds to each ton, and we have four tons of compost to the mule, equal in agricultural value to the best fertilizers on the market, as has been demonstrated by actual soil test, conducted for a series of years by the Hancock Agricultural Club, by the Commissioner of Agriculture, and by various other parties in Georgia.—If farmers prefer the manipulated compounds, they will find *them* most profitable composted with stable manure and cotton seed."

Importing Nitrogenous Fertilizers vs. Producing them on the Farm.

A later circular from the same source estimates the amount paid by the farmers of Georgia for artificial fertilizers in 1876 over three and one-third millions of dollars ($3,344,982.06)! A large proportion of these contain nitrogen. The nitrogenous material comes chiefly from fish captured on the Atlantic Coast, and from the waste products, dried blood and meat scraps, of the slaughter-houses in the large cities of the New England and Middle States. A considerable amount of the phosphoric acid is obtained from bone, but more comes from the mineral phosphates mined in South Carolina or the Island of Navassa. The South Carolina phosphate rock is brought in large quantities to points on the coast of New York, Connecticut, Massachusetts, and even of Maine, where it is treated with sulphuric acid, and fish scrap added. The ammoniated superphosphates thus made are freighted back and sold to planters in the South. The latter must of course pay the cost of double transportation. Leaving the cost of transport out of account, cotton planters still pay hundreds of thousands of dollars for nitrogenous material brought from the North. If, instead, they would buy the plain superphosphates without nitrogen, carefully save their cotton seed and the manure from the fowl-houses and stables, and compost these home products with the phosphate, they might have nitrogenous fertilizers as good as they could import, and at much less cost.

One of the most cheering phases of the agricultural progress in this country is the fact that just this is being done by a good many southern farmers. Several makers of phosphates have already a large trade in plain superphosphates in the South.

What the farmer wants in these "plain superphosphates," or "acid phosphates," is soluble phosphoric acid, and he should select those which furnish it at the least cost.* High grade superphosphates are offered in the Atlantic cities at prices which bring the soluble acid at 10½ cts. per pound. I think the use of these articles is a matter worthy the attention not only of southern, but also of northern farmers, particularly those who live near the coast, where fish scrap can be had cheaply. An acquaintance in Connecticut lately bought a lot of the latter at rates which furnish him nitrogen at probably not far from 12 cts. per pound. By mixing this with the acid phosphate, he can make a nitrogenous superphosphate, the nitrogen in which will cost him perhaps 15 cts., and soluble phosphoric acid 12 cts. per lb., while he would have to pay 20 to 30 cts. per lb. for the nitrogen, and from 12 to 18 cts. per lb. for the soluble phosphoric acid in the better sorts of nitrogenous superphosphates offered in the market.

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* See Science Applied to Farming Correspondence, p. 34.

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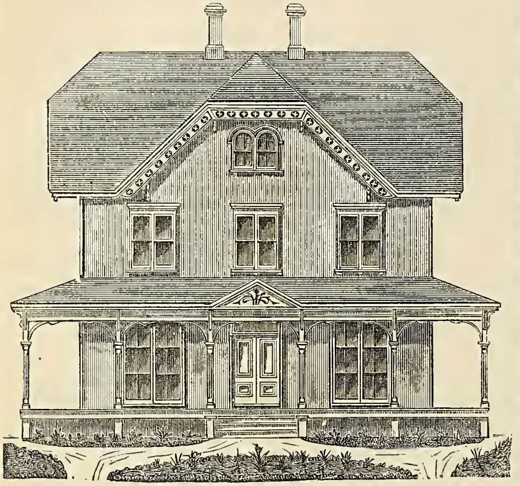


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

* * *

A Country House, Costing $2,800.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan is somewhat similar in style and materials to the one in the *American Agriculturist* of January, 1876. The changes here indicated adapt it to a more southern climate, such as larger window openings, more piazzas, and placing the domestic rooms at the *rear* of the main building....**Exterior,** (Fig. 1).—"Double Front" houses, (as those having their front entrance in the center are usually called), may face any point of compass, and are adapted to almost any situation. They appear best when located at sufficient distance from the road to allow extended, neatly laid-out approaches, and thus give an air of retirement....**Cellar,** (Fig. 2).—Hight 7 feet. Full size of the main building, with window openings on every side....**First Story,** (Fig. 3).—Hight of ceilings in main house 11 feet; in the wing 9 feet. The apartments embraced in the main house are unusually large, airy, and pleasant. All the windows open down to the floor, and are protected from sun and rain by the piazza. The Hall has a wide entrance leading from the piazza, and contains the principal flight of stairs. The Parlor and Living-room are of equal size, (14x24 feet), have windows looking in three directions, and have open fire-places in each. The rear entry occupies part of the main house and wing, its hight of ceiling is determined by the platform of the main stairs. It communicates conveniently with the rear piazza, main hall, living-room, kitchen, cellar stairs, and a closet. In the wing are a kitchen, work-room or summer-kitchen, butler's pantry, and two closets. The kitchen communicates with the living-room through the butler's pantry, which is "dresser finished" with drawers and shelving. The work-room is furnished with a pump, sink, and two stationary wash-tubs. If desired, a bath-room may be placed in this wing, and fitted up with the necessary plumbing, as shown in the Dec'r plans....**Second Story,** (Fig. 4).—Hight of ceiling 9 feet. A hall, 3 chambers, a bed-room, and 4 closets are the divisions of this story. The stairs leading to the Attic are placed above those of the first story, with a door at the foot....**Attic.**—The estimate provides for a floor in this, and for casing the 4 pair of windows, but it is otherwise left unfinished. Four or more bed-rooms may be made in this story if desired....**Construction.**—The materials are indicated in the estimate. The foundation walls show 2 feet above the ground. The timber is framed and raised in the most thorough manner. The beams are placed 2 feet apart from centers, and bridged with one row of "cross-bridging" in each span. Observe that the main posts are 25 feet long; this includes the whole hight from bottom of sills to top of plates, and allows for 4 feet of inside breastwork from the attic floor to foot of main rafters. The main roof is set at an angle of 45°. The "open worked" barges in the pediment, (fig. 1), are of 1½ inch plank, 16 inches wide, pierced in simple figure, and require only one set of patterns for the 4 gables. The piazza rafters show in their ceilings. Perforated pediments in each side allow the escape of heated air from under the roofs. The columns are "boxed," 7 inches square, and chamfered. The spandrells are scroll-sawed from 3-inch timber. The two full stories are hard finished on two coats of brown mortar and seasoned lath. All doors are paneled, and all architraves in the main house are double molded; in the wing single molded. All sashes are 1½ inch thick, and glazed with second quality French glass. The parlor and living-room have marble mantles; the chambers have marble shelves resting on stucco trusses. The main stairs have an 8-inch octogan newel, a 2½x4½ molded hand-rail, and 2-inch fluted balusters, all of black walnut, as also are the saddles to each room. All knobs, roses, and escutcheons are of white porcelain. All wood usually painted has two coats of best paint, in shades to suit the owner's taste.

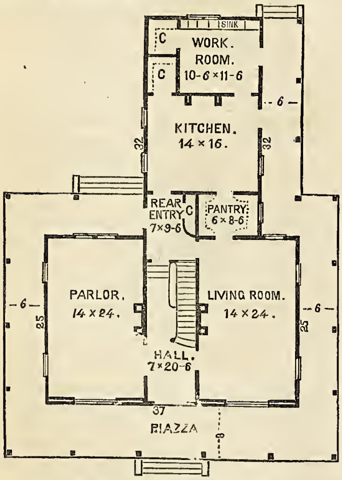


Fig. 3.—PLAN OF FIRST FLOOR.

Estimate of Cost:

137 yards Excavation, complete, @ 25c. per yard	$34.25
52 perches Stone work, @ $2.75 per perch	143.00
6,000 Brick, furnished and laid, @ $12 per 1,000	72.00
44 feet Blue Stone, @ 30c. ℔ ft.	13.20
623 yards Plastering, complete, @ 35c. per yard	218.05
7,126 feet Timber, @ 2c. per ft.	142.52

viz. 1 Sill, 4x8 in.x205 ft. long. 90 Beams, 3x8 in.x15 ft. long.
10 Posts, 4x8 in.x25 ft. l'g. 15 Beams, 3x8 in. x17 ft. long.
2 Girders, 4x8 in. x25 ft. l'g. 4 Valleys, 3x8 in. x 23 ft. long.
1 Tie, 4x6 in. x124 ft. long. 40 Rafters, 2x5 in. x20 ft. long.
1 Plate, 4x6 in. x205 ft. lg. 1 Piazza, 3x8 in. x 370 ft. long.
1 Piazza, 3x5 in. x332 ft. long.

500 Wall Strips, @ 13c. each	65.00
360 Siding, @ 28c. each	100.80
Materials in Cornices, corner boards, etc.	40.00

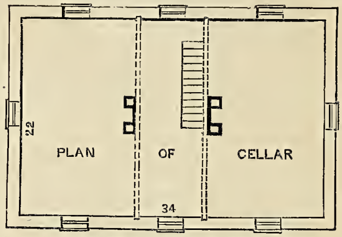


Fig. 2.—PLAN OF CELLAR.

360 Shingling Lath, @ 6c. each	21.60
65 bunches Shingles, @ $2 each	130.00
134 Hemlock Boards, @ 16c. each	21.44
15 squares Tin Roofing, Gutters, and Leaders, @ 8c. ℔ ft	120.00
360 Flooring @ 28c. each, $100.80; Stairs, complete, $90	190.80
Piazzas, except roofing, complete	150.00
8 Cellar Windows, $48; 30 Windows, $300	348.00
28 Doors, complete, @ $10. $280; Closet finish, $20	300.00
Mantles and Shelves, $75; Nails, $20	95.00
Painting, complete, $200; Cartage, $35	235.00
Pump. Sink, and Range, $60; Incidentals, $49.34	109.34
Carpenter's labor not included above	250.00
Total Cost, complete	$2,800.00

The following detailed estimate of the cost of Windows and Doors, "complete," are given in answer to several inquiries, as to what is included in the published lists:

First Class Windows, complete.—For a 2-7x6-2 window, with paneled back, and full double trim, viz:

22 feet running lumber in frame, @ 4c	$0.88
4 pulleys	.14
28 ℔s iron weights, @ 2½c.	.70
Sash Cord, 8c.; Screws, 3c.	.11
22 ft. of 8-inch trim, @ 8c.	1.76
Paneled back materials	.48
Sash, glazed, counter checked and hung.	2.80
Blinds with fastenings	1.80
Materials in outside cap	.64
Nails, 8c.; Labor, $4	4.08
Total	$13.39

Second Class Window, complete.—For a 2-7x5-2 window, with plain single molded trim, viz.:

20 running feet of lumber in frame, @ 4c.	$0.80
4 Pulleys, @ 40c. ℔ dozen.	.14
26 ℔s. Sash Weights, @ 2½c	.65
Sash Cord	.08
Screws	.03
16 ft of 5-inch trim, @5c.	.80
Sash, glazed, counter-checked and hung	2.16
Blinds, with fastenings	1.56
Nosing, apron, and drip	.30
Nails, 6c.; Labor, $2.50	2.56
Total	$9.08

Where there are an equal number of each class, I should put their cost at $11.23 each, and where the second class preponderates, as is usually the case, the *average* price is reduced accordingly.

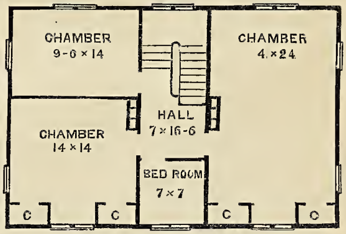


Fig. 4.—PLAN OF SECOND FLOOR.

First Class Doors, complete.—Double-faced, 2-8x7 ft. full trimmed:

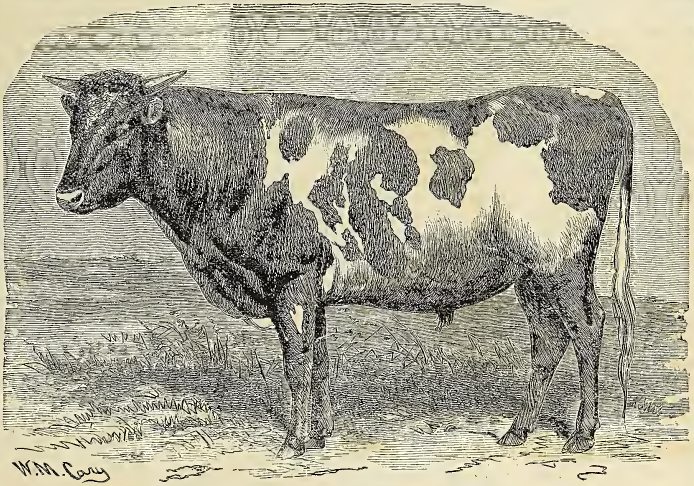
Door, 4-paneled, at fac'y.	$2.50
20 ft. running trim, 8-inch, @ 21c.	4.20
Saddle	.15
Butts and Screws	.16
Locks and knobs	.50
12 running feet Base, @ 9c.	1.98
Nails, 6c.; Labor. $3	3.06
Total	$12.55

Second Class Doors. complete.—Single-faced, 2-6 x 6-8, single trim:

Door, 4-paneled, at fac'y.	$1.90
18 feet running trim, @ 15c.	2.70
Saddle	.15
Butts and Screws	.15
Locks and knobs	.35
22 running feet Base, @ 7c.	1.54
Nails, 5c.; Labor, $2	2.05
Total	$8.84

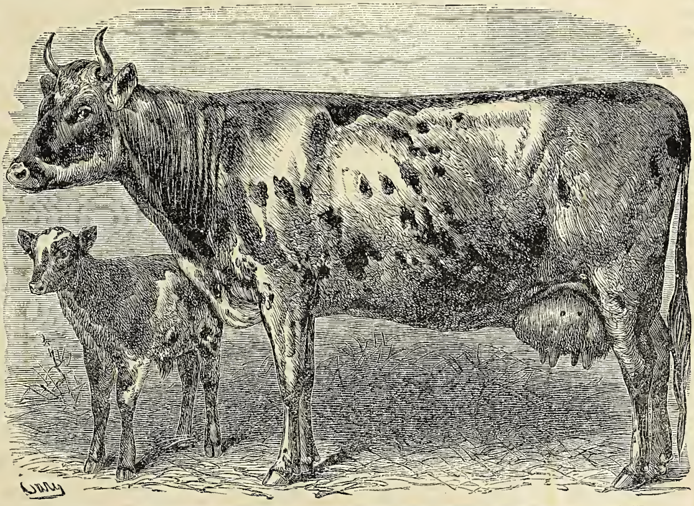
It will be noticed that the item of *Base* is included above estimate for doors. The figures (22 feet) are an average per door, deduced from careful calculations, and are introduced here for the purpose of aiding any one in readily making up an estimate for a whole building,

Ayrshire Cattle.



AYRSHIRE BULL "CASPER."—*Owned by Messrs. Benson & Burpee, Philadelphia.*

The prominence given of late to Short-horn and Jersey cattle, and the popularity amongst fashionable breeders which these breeds of cattle at present possess, have tended to throw into the background other races, which deserve at least equal consideration from farmers and dairymen. We do not now, nor is it probable that we ever shall, possess any one breed of cattle that will combine in itself all the good qualities or peculiar advantages, which would make them universally desirable. The great difference in tastes and necessities, not to speak of prejudices, on the part of those who keep cows,. will always tend to restore to popularity any breed which possesses value for a particular use, no matter how much it may have been overshadowed by the temporary ascendency of other breeds which may have sprung into fashion or repute. Just now we hear of nothing but Short-horns, Jerseys, and their pedigrees, points, premiums, and enormous money values, or reputed values. While there is no objection to this, so long as it does not operate injuriously to other deserving breeds, and tend to cast reproach upon them, as inferior in intrinsic value, yet, when there is danger that public opinion may be misled by it, and prejudices created, it becomes objectionable, and is to be guarded against. As to dairy cows, while the Jersey is unsurpassed by any other breed for the place it holds, yet that position is, to some extent, narrow, limited, and strictly defined. As a butter cow the Jersey is probably the best that can be obtained. Having been bred for many years strictly with regard to a yield of very rich milk, she fills her place better than any other race of cows can. But as a dairy cow for the production of butter and cheese, the Ayrshire cow has been carefully bred for many years, and before the Jerseys became popular, had gained a high reputation, which has never been lost, and probably never will be, so long as care is exercised in her breeding. It is not possible that the Ayrshire cow can be displaced by the Jersey, nor that any injurious competition can arise between the two for a lengthened period, because the best and fittest for any particular service will in use always keep its place. Therefore we expect to see the Ayrshire cattle become before long as popular as they ever were, and occupy the high position in public estimation, to which they are entitled. The Ayrshire breed is one of the oldest in existence. As with every other breed of valuable cattle we possess, it owes its origin to a mixture of races. It is possible to improve a race by good feeding, and care and skill in selecting breeding animals; but to change entirely the character of a breed for the better, without the crossing of other breeds upon it, would be unparalleled in the history of our domestic cattle. The Ayrshire originated from a cross of the Dutch cattle upon the native race of the locality, and are related to the Short-horns through their ancestry. A hundred and twenty-five years ago, cattle were brought into Ayrshire from the English county of Durham, where the Short-horns (formerly called Durham cattle) were originally bred; and the progeny of these were soon scattered throughout Ayrshire. Care in breeding and management helped to produce what soon became a very valuable breed for the dairy. They did not surpass the Short-horns, for in those days this breed was noted for its dairy qualities; but they became more valuable for the locality, in which they had grown up, and for the purposes of their owners. The locality was a moist pastoral country on the south-west coast of Scotland. and the climate was such, that during the winters some hardships must be endured, such as severe wintry weather, and poor feeding, when the pastures were bare. The purpose for which the cattle were used, was the butter and cheese dairy solely; the production of beef was not an object, only the old and inferior cows being fed for the butcher. The growing demand for these dairy products stimulated the growth and improvement of this breed, and they in time became noted as producing more milk and butter, *for the same quantity of feed*, than any other breed in existence. This quality they still possess, and the Ayrshire dairy district still retains its reputation for its dairy products. The method of breeding usual amongst Ayrshire dairymen has resulted in the production of model dairy cows. In respect of form, Ayrshire cows are in no way inferior to the best Jerseys. The style of bull chosen by the Ayrshire breeders, has been selected with regard to this desired form. A bull of somewhat feminine characteristics has always been preferred. A fine head and neck, broad hips, and full flanks, are desirable, and a very deep dew-lap, and roundness of the hindquarters, are not desired. The bull, of which we give a portrait on this page, will serve as a very fair representative of this breed. The engraving is from a photograph by Schreiber, of Philadelphia, and due allowance must be made for the inevitable defects of photography, which, however, do not misrepresent the animal. This bull ("Casper," No. 18 in new Vol. of Ayrshire Herd-Book) is the property of Messrs. Benson & Burpee, of Philadelphia. He took 1st prize at the Burlington Co. Agricultural Society's exhibition, at Mt. Holly, Oct., 1875, and also in 1876. He is out of "Eileen A'Roon" 1116 by "Snap" 1477, winner of 1st prizes wherever shown. The Ayrshire cow having been bred for one specific object, which has been most completely attained, may be taken as a model of what an excellent milk cow ought to be. In choosing a milk cow, the points to be observed should be as follows: a head small, long and narrow at the muzzle; horns small, fine, and translucent at the surface, bent gracefully forwards, and placed widely from each other; the eyes not large, nor prominent, but full, brisk, and lively; the neck long, slender, and tapering towards the head, with a little loose skin below; the shoulders and forequarters light and thin; the hindquarters large and broad; the back straight and wide across the loins and hips; body deep in the rib, and on the whole wedge-shaped; tail thin and long; legs fine in the bone, and short, with firm, neat joints; udder square and capacious, but not hanging low, reaching well forward, and not fleshy, but loose when empty; teats moderately



AYRSHIRE COW "MAGGIE STEWART."—*Owned by Mr. Wm. Crozier, Northport, L. I., N. Y.*

long and small, pointing outwards, and set wide apart from each other; milk-vein large and prominent; skin loose, thin, and yellow in color; hair soft, fine, and well covering the skin; the figure, when in good condition, handsome and well proportioned, with no aptitude to take on flesh or fat, and finally the disposition should be gentle, docile, fearless, and not easily disturbed. An animal with such a structure must be a good feeder, and possess an excellent digestive capacity, with no waste places upon which her food will be expended, and all the animal functions will be exercised in the direction of profitable production of milk. The Ayrshire possesses all these good points in a remarkable degree. While she is of a very quiet disposition, she is, like all high bred animals, nervous when ill-used or under restraint, and resents such treatment by withholding her milk, or by manifestations of anger. Kind and gentle treatment is therefore necessary with the Ayrshire cow, and the petting and fondling which the kind owner of a beautiful animal is always ready to bestow upon her, will render her very easy to manage, and perfectly docile. The portrait here given is taken from life, from "Maggie Stewart," an imported Ayrshire cow, owned by Mr. Wm. Crozier, of Northport, L. I., N. Y. When standing for her portrait, she had her week old calf by her side, and was milking 23 quarts in the day. Mr. Crozier writes of the cow "she is the handsomest Ayrshire I ever saw, and the calf is a perfect gem. The cow is perfect in every way, and her milk, by actual trial in the glass, produced on 8 in. in depth, 1⅞-in. of cream. This is nearly 25 per cent. When she was at the Centennial, I refused many offers for her, and even declined to name a price to a prominent Canadian breeder, who wished to purchase her. I want the best, and therefore could not dispose of her."—Mr. Crozier is well known as one of the first and most successful breeders of Ayrshires in the United States, and while he may be pardoned for being somewhat enthusiastic regarding a favorite cow, nevertheless, from our own knowledge of the animal, we would not attempt to reduce his estimate of her excellence.

Among the Farmers.—No. 12.

BY ONE OF THEM.

Pastures.

We have no such pastures here as I was brought up among; at least I encounter no such clayey loams, in which a score of nutritious pasture grasses dispute the possession of every inch with white clover and daisies, often fairly crowding out the latter, in fact always doing so, if helped by a little manure. Among our sands and gravels, and light loams, if it were not for the brambles, huckleberry bushes, and straggling cedars, which are mowed off and burnt every few years, I doubt if the grass would not run out altogether, and give place to moss and weeds. Among the shrubs named, the grass gets growth enough during the spring to form an excellent mulch to the soil, if the weather is very dry, thus enabling it to weather the drouth. And from these centers it extends itself rapidly on all sides, both by seeds and by "stooling," so long as favorable seasons last. Occasionally we find land so good, through water in the subsoil, or from some other reason, that it does not need tillage, but gives good return in pasturage year after year. As a rule, however, we have no objection to plowing our pasture land. I have seen farmers in this valley plow in July, sow buckwheat, and, after taking off a good crop, leave the land to grow up to grass and weeds. The pasture is improved by the practice, and fairly reëstablishes itself in a year or two.

After a clay soil is once filled with clover roots, it will hold a sward for years, provided only it be closely cropped in the growing season, not fed too early in the spring, nor too late in autumn. Rolling in April or May, and a top-dressing of plaster in July, encourage, stimulate, and fix it in the way of well-doing wonderfully. Leachy soils require very different treatment. The best thing for our gravelly and sandy soils that I know of, is swamp-muck, composted with lime and ashes. It is hard to spare the ashes for pasture lands, but we can easily get the lime, and gas-house lime answers very well. The application is best made in autumn. Last season those who had, or could hire

Bog Meadows,

considered themselves fortunate. I have one of a few acres, through which a brook flows, or rather, in which a brook originates from sundry springs, which never fail. We pasture this in early spring, and when the coarser grasses begin to grow, remove the cows, and let the grass grow for bedding. By the time that haying is over, the swamp-grass is fit to cut. On account of the roughness of the ground, much will, of course, remain uncut, and much grass that cows will eat, grows around the edges and in the shrubby clumps which have never been banished. When the cows spend a few days in this meadow, they always worry, try the fences at every weak spot, seem to spend half the day in restless meanderings, but invariably give more milk. Why it is, I can only guess, in fact am at a loss, for they have water enough in every pasture, they fill themselves equally well elsewhere, and certainly relish their food much better. The past season the swamp-grass has been unusually green and sweet, as well as more abundant, than common, which is owing to the fact that there has been much less water in the swamp than usual.

Throughout this region the dry weather has enabled farmers to get at the swamps, both for clearing off brush and bogs, preparatory to making use of the land, and for the sake of getting out the peat or muck for manurial purposes.

I almost dread to reclaim my swamp-meadows, since they have proved so exceptionally valuable, but I think that after they are fairly brought under plow, and laid down to grass, I can still, by some simple system of irrigation, secure grass in the driest seasons.

Benefits of the Drouth.

One of the manifest benefits of the drouth was the excellent condition of the fall pasturage, and the timothy meadows. The grass looked dry and brown enough all summer—but it lived, and the autumn rains brought it forward bouncingly. The extreme dryness of the surface of the soil is said to cause the water, as it is evaporated off, to bring up from their retreat in the subsoil, soluble salts of various kinds, and leave them where the roots can get at them. This accounts for the vigorous growth, but so does also the fact that at the gradual coming on of a period of drouth, it affects plants much as the winter does. They retire as into winter-quarters in July, and rouse themselves in October much as they are used to doing in May. So far, however, I observe no tendency on the part of Timothy, Orchard, June grass, and their kindred, to throw up flowering stems, but only leaves.

"Apple-wine"—Cider Making.

I fell in with Dr. Hexamer, the other day, not having seen him since he told me the story of his cider at "the Centennial." He had seen the account in my letter, but having narrated his experience to sundry persons, did not suspect me of the authorship. It was just in the middle of the apple harvest, so I drew him out to speak of his cider-making, and the facts elicited will, I am sure, be read with profit. I have known, first and last, quite a number of famous cider-makers—men who, in their little circles, were oracles upon the subject of cider, who sold their crop of red-streak cider bottled, or whose russet or pippin cider was the *ne-plus-ultra* in the opinion of the wiseacres of Hartford or Norwich or Newark—and without exception the old fellows each made a profound secret of some part of his process. One "fined" with eggs, and one with isinglass, one hung a piece of beef tied to a string to regulate the fermentation, and, as said before, each one had his pet mystery which was to die with him, to be bequeathed to his heirs, or perhaps sold. —Well, Dr. Hexamer's success depends upon no secret; he seemed delighted to tell me his processes, and hopes that I will succeed as well as he does.

Grinding.—Only sound ripe apples are used, decayed and green ones are thrown out—and so are very wormy ones. They are *crushed*, not grated. *No grating mills make good cider.* That is—really good cider can not be made from grated or pulped apples. The best cider-mill the Doctor has ever used is Daniell's, a mill, excellent in principle, but which, like too many other first rate things was not well made, and so proved a failure except in a few hands. The Doctor's mill was useless half the time the first season. The cogs broke out, and other evidences of insufficient strength interfered with its use until a good part of the machine was re-cast, heavier and of better iron. With one horse, using this mill, he has crushed a barrel of apples a minute, and made 10,000 gallons in a season. The usual product is nine gallons from a barrel of common apples—but the Roxbury Russets, from which his choicest cider is produced, do not yield over five or six gallons to the barrel.

He insisted also on absolute cleanliness; and though he did not enlarge, I am satisfied that the chickens do not run over his apple heaps, nor do men tramp across them; that mill and press are not stuck up with decaying souring particles of fruit, nor is oil dripped about in greasing the screws, etc.

Pressing.—With crushed apples there is no need of press-cloths, but the cheese is laid up with very little straw on the outside next the frames, and when all the juice has run out by the first pressure, he finds it so solid that, the frames being removed, the edges, six inches in width, can be cut off with a hay-knife and piled on the top, and the cheese given another pressing, by which several gallons more of cider will be gained. This of course without replacing the frames. The last and severest pressure gives the clearest and best juice.

Barreling and Racking.—As fast as it runs off the juice is placed in thoroughly cleaned, once used cider barrels. These are preferable to spirit barrels, for there is always a perceptible flavor of the spirits remaining. Sherry or Cognac casks are less objectionable. The first fermentation soon commences, and in a week or ten days is sufficiently over for the cider to be racked off into other barrels, with which still greater pains are taken, and these being filled full are closed up, and in them the cider remains until spring. Once a fortnight the barrels are opened and filled up full. There is a constant evaporation through the pores of the wood, and in some cases several quarts of cider will be required. This is a very important matter, for not only might the air find access, and thus start the formation of vinegar, but mold would soon form upon that portion of the barrel not covered with cider, and a musty or stale flavor would be perceptible. The object of racking is to remove the cider from the lees which, in time, impart their own bitter taste to it, and this first time, especially, to withdraw it from the influence of those particles of apple which may have escaped the strainer, as these soon undergo a putrefactive fermentation which destroys, or effectually conceals any pleasant flavors.

Shrinkage.—This amounts, in a good dry cool cellar, to about three per cent per annum; in a moist cellar of course it would be less—but the cellar should be quite dry. The rule for a wine-cellar is, that there must be no part of the wall so moist that you cannot light a match upon it, and dryness is quite as important for cider as for wine. The shrinkage must constantly be made good, for the reasons already stated; to this end certain barrels of cider are set aside, and all the barrels and casks examined and filled up from these once in two weeks.

Cider-years.—The quality of the cider of different years varies greatly, perhaps as decidedly as do the different vintages. Dr. Hexamer's experience is of course limited. His first cider of extraordinary excellence was that of 1870; then that of 1872 was very good, but not equal to it. The next two years produced cider of poor quality, but that of 1875 promises very well, and this year there has been an unusual amount of sunshine and good ripening weather, so that it would seem as if the cider could hardly fail to be first rate. It cannot be told, however, until a year from this time, and even then imperfectly. There has been no year equal to 1870 for a long time, five or six years at least. If therefore we have three good cider-years in a decade we should be satisfied. The excellence of the cider depends upon the quality of the apples.

The Spring Racking occurs before the cider works, as it will when warm weather comes on, say about the last of May. It is well to do it, as occasion suits, any time from the last of March to the early part of May. At this time the barrels into which it is placed should be selected with the greatest care. When newly emptied Rhein wine-pipes can be obtained, nothing is better. They hold about 160 gallons, and impart no foreign flavor which is perceptible. The little flavor they might give would be considered as an improvement.

Fermentation goes on for a long time constantly in cider, but very slowly,—the slower the better, hence large casks are preferable, as their contents are less easily influenced by changes of temperature, and fermentation is more regular. So long as there is any turbidity, the fermentation has not ceased. During the first winter, when it is quite active, the bung-hole should be closed with a cork, in which one end of an inverted ∩-tube, (or siphon), is placed, the outer end being in a bottle of water. The object of this is to allow the carbonic acid from the barrel to escape, but to prevent the air flowing back when active fermentation ceases. The U-tube should be used again after the spring racking, but as soon as the more active fermentation is over, the casks may be bunged up.

The cider is racked again when it is a year old, and after that once a year until it is four years old, when it is fit to bottle. It is usually clear at three years old, or very nearly so. At one year, cider from apples as sour as Roxbury Russets, will be quite sweet, a large part of the sugar still remaining, it being not yet converted into spirit and carbonic acid.

No fining of any kind is used. It always injures the flavor, and so "flattens" the cider that it never recovers. Cider is more sensitive to foreign flavors than wine, hence there should be nothing but cider and apples kept in the cellar with it, and this is the Doctor's practice.

I have taken a good deal of space to tell the gist of our conversation, and I really hope that many of the readers of the *American Agriculturist* may be encouraged to produce cider which will be equal to good hock at three or four years old. This particular portion of New Jersey used to be famous for its "Apple Jack"—I rejoice that the old distilleries are seen in ruins, here and there, all about. I do not know of a single one now in operation—and sincerely hope that "Jersey lightning" may soon be known only historically. The production of

Good Cider Vinegar

is so remunerative, that it probably does not pay to distill the cider any more. Yet there seems to be little trade in vinegar. All the inferior cider, that left with the lees when the cider is racked, properly handled, makes fair vinegar—but nothing is truer than that the best cider makes the best vinegar. It also needs age, for with it it gains not strength, but flavor, and a certain unmistakable quality which makes it valuable.

Poland-China Pigs.

I expressed an opinion, or rather a surmise, that this so-called breed of swine was not so fixed in its characteristics, as it should be, but that it possessed the inherent tendency of cross-breeds, before they become well established, to revert towards one of the original breeds. I have had some correspondence lately with a successful breeder of these pigs. He thinks the "tendency is to drift towards the Berkshire," and not towards the coarser of the original breeds—at least I must admit that his pigs show that disposition. Judicious breeding will correct this "drift"—whichever way it tends.

Testing out-crosses in Breeding.

It is no more important with pigs than with other kinds of animals to seek crosses no way related to one's own breeding stock; then to test the progeny one year or more to see if the cross "nicks" well, before incorporating the blood with that of the herd or flock. Many a fine herd of cattle, flock of sheep or pigs—or excellent strain of poultry, has been seriously injured by the introduction of males judged of simply by their beauty, and by their pedigrees perhaps, without putting their qualities to a preliminary test. There are comparatively few persons who have

True Breeder's Instincts.

The science of zöotechny has indeed its accurate rules, and axioms, but in the application of them there is great scope for the exercise of judgment. A good salesman is rarely a good breeder, for he first makes himself believe in the extraordinary excellencies of his own stock, and then he convinces others that they are as wonderful as he thinks them. Such a man needs scales of points and rules, and the letter of the law, to tell him the qualities of his own cows and pigs and poultry. The real breeder values he knows not why, judges he knows not how, long before he brings out his scale of points, or studies disqualifications. He knows what crosses will "nick" well, by instinct; at least working by his own ideas of the fitness of things he rarely fails. When he will allow himself to be guided by the principles of breeding, as held by its most enlightened expounders, he is unsurpassed. Such a man is a boon to any agricultural community, and with wealth is, or is likely to be, prominent as a breeder of pure blood stock. The scores of people without this instinct, who set themselves up for breeders, merely because they think they can make money, inevitably fail. They would do well at

Raising Grade Stock,

which is legitimate farming. It is vastly better to raise superior grade animals, and to have one's herd constantly improving for generation after generation, than to attempt to breed full bloods, and see the heifers (or the pullets) one year after another inferior to their dams. The average of grade animals, or of cross-breds, are so uniformly superior to average full-bloods, in all useful qualities, that it is hard to find an exception to the rule.

Keeping Poultry on a Large Scale.

I have never done it, but there is in the vicinity of large cities such a constant temptation to do it, that several of my neighbors have been led into keeping large flocks, and thus experience, of one sort or another, has accumulated, and become public property. I consider a flock of two hundred hens a large one—too large as a general rule. Such a flock was kept by R—. He had besides several hundred pigeons, and a flock of turkeys. They were common hens, Light Brahma blood preponderating, had all they could eat of damaged grain, wheat screenings, hot buttermilk, thickened with bran, with pork and beef scrap-cakes to pick at. For several years they did admirably, but that terrible scourge, the chicken cholera, broke out in the flock, and its destruction was inevitable. "At one fell swoop" all the healthy ones were killed and marketed, and the rest—*composted*. The pigeons escaped. There was profit in this operation, but it required nerve—more than most men have—to kill off a lot of hens, laying eggs worth 4 cents, or even 5 cents, a piece, in the very midst of the most profitable laying season. There is, by the way, a good deal of profit in pigeon-raising. Well fed they will not trouble the gardens and oat-fields, and they will bring a good price dead or alive.

Similar cases to the one just mentioned, which resulted disastrously, might be mentioned, as occurring on every hand. S— built a nice hennery, capable of accommodating 1,000 laying hens; they were divided into flocks of 100 each, perhaps, or were to be so divided—few of the flocks ever reached that number. About 300 hens were bought in the neighborhood, at about $1 each. They were good ones, young, well selected, and of all breeds. They began to lay. Eggs were 5 cts. a piece, (55 to 60 cts. a dozen). The cost of feed, care, shipping, and marketing, was comparatively insignificant. Our friend was a reader. He took pains to do as the books said. He was not above taking counsel, but he took little. His profits began to excite him. The hennery was fast paying for itself, and was barely one-third full. He filled, or began to fill it, with carefully selected hens and pullets, found in New York markets. This was fatal. Catarrh of the most infectious or contagious kind, known as *roup*, broke out, and went from flock to flock. He went through a terrible siege—nursed the poor things night and day, following the most approved systems of treating the malady—but all in vain. Egg production almost ceased. The odor in his cleanly houses was insupportable. He was worried past endurance, and—gave it up!

There seems to be a fatality about it, almost, yet

A Few Succeed.

There is F., for instance. He told me that his 250 hens brought him in $2.50 each, clear profit every year. They are, I believe, in one flock, at least I do not remember any separation of the yard or buildings. They have the range of a large barn-yard, and at times of the lawn and farm. The houses are simple, warm, and light. They seem to be exceedingly dirty, and pervaded with an almost stifling atmosphere. This is the secret of success. Dusting boxes are located in all parts of the long range of hen houses. Lime, ashes, and fine earth are kept in them, and this the chickens flout and fling into the air in clouds. It pervades every corner—lies in drifts almost on unused roosts, breaks down the over-loaded cob-webs, and not only drives lice away, but seems to give vigor and health to the fowls. Otherwise the fowls are not peculiarly treated. They are of laying breeds, principally Leghorns, and he would be glad to increase the number, if he could buy just such as he wants at reasonable figures. He raises most of his stock, but has never been able to raise as many as he needs. This case offers real encouragement to egg raisers, for I certainly do not see any reason why any other person should not succeed as well. I would, however, separate such a yard into flocks of fifties or thereabouts, after considering R.'s experience, and that of many others.

How to Manage Night-Soil.

The fertilizing properties of night-soil are well known. The principal reason why this valuable material is neglected and permitted to go to waste, is the difficulty of handling it. If improperly handled, it is disagreeable and difficult to apply to the uses for which it is best adapted. There are many cases in which it could be made use of very conveniently, if rightly managed. In country towns and villages it is difficult to dispose of it, and it becomes a serious nuisance to householders, and a detriment to the public health, when it ought to be turned to profitable uses. In some other countries this refuse matter is eagerly collected and carefully used by the farmers. The methods employed in England, Germany, and France, might very well be adopted by us, and a large quantity of fertilizing material be gathered. By the methods there in use the night-soil is easily handled and prepared for distribution upon the land, or for mixing in composts. Arrangements are made with persons in towns and villages who wish to have the soil removed, and the time being fixed (this is always in the night, from which circumstance the name given to the material is derived), wagons with tight boxes, or carts, are sent to the place. Carts are mostly used, as indeed they are in Europe for most of the farm work. The carts, or wagons, carry out a quantity of earth, chopped straw, ashes, or such other absorbent as may be conveniently procured, and some sheaves of long straw, or else the ashes or other absorbent used, which is frequently the sweepings and scrapings of streets, is prepared upon the ground or near by. This material is then disposed in the form of a bank enclosing a space of sufficient size to hold the night-soil, as shown in figure 2. A reserve heap is kept to be mixed with the night-soil as it is emptied into the place prepared for it. Wheelbarrows with tight boxes are generally used to convey the soil from the cesspool. When the whole has been removed from the cesspool, the cut-straw is mixed in and the banks of earth are turned over upon the pile, which can then be handled with shovels or forks, and is ready to be loaded into the wagon. Some of the long straw is laid in the bottom of the wagon-box, and the mixed mass is thrown upon it, layer after layer alternately with straw, until the top of the wagon-box is reached. It is most convenient to have a rack, or flaring side-boards, to confine the upper part of the load, but this is not necessary if the loading is properly done. The manner of loading the top is as follows: a bundle of straw is spread so that half of it projects over the side or end of the load. A quantity of the mixed stuff is forked on to the straw, the loose projecting ends of which are turned back on to the load when more is laid upon it. The doubled straw holds the loose stuff together, which might else be shaken off the load as it is carried home. In this manner the load is built up until it is completed, when it appears as shown in figure 1. Loads thus made are carried many miles without losing anything on the journey, and the mass, which would seem to have no coherence, is kept solidly together. Carts are sometimes loaded to a hight of two or three feet above the side-boards, and are made to carry a load for three horses. By this management this material is no more disagreeable than ordinary manure, and the work of moving it is rendered quite easy.

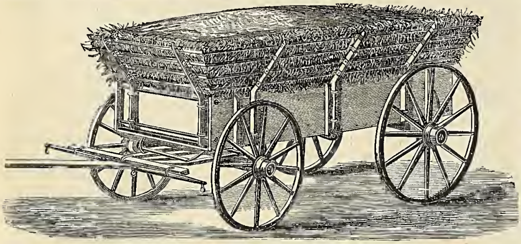


Fig. 1.—MANNER OF LOADING NIGHT-SOIL.

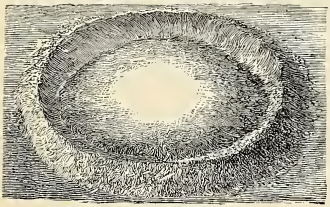
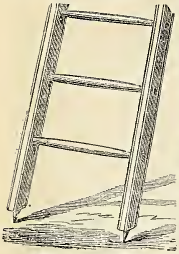


Fig. 2.—PREPARING NIGHT-SOIL.

Spiked Feet for Ladders.

In making the feet for ladders so that they can not slip, it is well to avoid another danger, viz., that of the feet entering the soft ground unequally, and causing the ladder to be overthrown in consequence When the feet are simply pointed, this accident may easily happen in a plowed orchard, or in the soft ground around buildings. But if a sharpened pin is fixed in the square foot, as shown in the accompanying engraving, the ladder is not only prevented from slipping upon hard ground or a smooth floor, but it can not be forced into soft ground further than the square foot, and there is therefore no danger of its being overset in consequence of one foot penetrating the soil more than the other. The hole to receive the pin should be bored with an auger, and the pin should have the end that is inserted in the hole perfectly square and level, so that it can not be forced further into the wood than is intended. If it is screwed into the wood, so much the better; this may be done by hammering the pointed end of the pin square so that it may be taken hold of with a wrench and turned.


FEET OF LADDER.

How Axes are Made.

A great deal of skill is needed to make a good ax, and only the best smiths work at this business. Formerly the work was all done by hand, and was therefore done slowly. Now hammers worked by steam, which make two hundred or more strokes in a minute, are used, and to make and finish an ax, requires but a very short time. The work is divided into three distinct portions, and a different set of men is employed at each. Thus, one man, or set of men, cut long bars of iron into exact lengths, by means of a shearing machine, which works in the same manner as a pair of scissors might be made to do. These lengths, which are all exactly alike for the same size of ax, are called "molds." Others cut a bar of steel into short pieces, exactly as long as the pieces of iron are wide. A piece of steel and a piece of iron are then heated, and the steel is welded on to the iron, just at the middle, as is shown at figure 1. The piece of steel is to form the poll of the ax. The joined piece is again heated, and the ends of the iron are worked under the hammer until they are made quite thin, as seen at figure 2. These thinned pieces are taken by other men, heated, and bent around an oval-shaped mandrel, so as to bring them to the form seen at figure 3. The mandrel tapers a little, so that one end of the hole is larger than the other end. But while the iron is hot the mandrel is changed, and put into the hole the other way, and the iron is hammered over it. The hole is thus made larger at both ends than in the middle, and the purpose of this is, that when the handle is fitted on the ax, and a wedge is driven into the end of the handle, the wood is spread, and fits the larger part of the hole tightly, and the ax can not fly off from the handle; neither can it slip down towards the lower end of the handle, if it is properly fitted to it. A thin piece of steel is then placed between the thinned parts of the iron, and the whole are heated and welded together by hammering or pressing in properly shaped dies. There is then a rough shaped ax, which needs very careful working, lest it should be spoiled. This last working, which is to bring it into its final shape, is done in what is known as a hollow fire. This is a fire which is covered all over except one small hole at one side, with a crust of coal, see figure 5, and it is built up very carefully of fine soft coal, which is frequently wetted, until it is all closed in. The work heated in a fire of this kind, is exposed all over to a very intense heat, so that it can be equally worked, and it is kept from the air, which would injure it. The rough ax heated in this fire is then hammered very skillfully, to spread out the blade and make it flat and thin at the edge. The edge is pared to a proper shape by a cutting machine, and is finished with a round-faced hammer, called a "top-faller." The parings are not thrown away, but are carefully saved to be sold to the gun-smiths to make gun barrels. The ax is then tempered, both on the poll and the blade, ground upon a large revolving grindstone, and polished upon a wooden wheel covered with leather, known as a "bob," and which is sprinkled with emery powder. Most of the ax factories now have emery wheels, upon which this work is done, in place of the old-fashioned "bobs." Some axes are ground and polished bright all over; others are blackened in part; these are only ground upon the bright portions; the black parts are left rough and covered with Japan varnish. If the axes are to be sold with handles, these are fitted in; if not, each one is wrapped in paper, and a dozen is packed in a strong box. The axes are made of different weights, from 3 pounds up to 6 pounds; some are made with double bits, but the method of making them is the same in all, excepting that double bitted axes have no "polls."

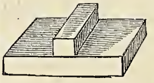


Fig. 1.

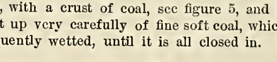


Fig. 2.—THE AX BEFORE BENDING.

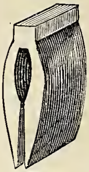


Fig. 3.

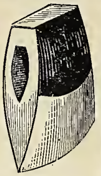


Fig. 4.

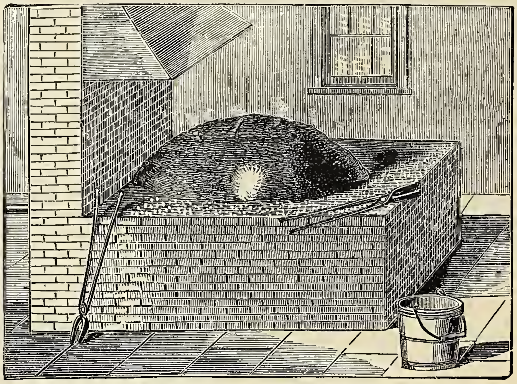
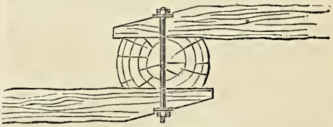


Fig. 5.—FIRE FOR FINISHING THE AX.

A Bolted Fence.

The fence here described and illustrated, is put together with bolts. The posts are set in the usual manner, and are flattened to about 6 inches in thickness where the rails are fastened. The rails are flattened at each end to about two inches in thickness, so that a bolt 12 inches long, or a little less, will be required. If sawed rails are used, they should be an inch and a quarter thick, and the posts, if sawed, will be six inches square, so that in this case a 9-inch bolt will be long enough. Each alternate panel of the fence is fastened to the opposite side of the posts; thus, if one panel is on the inside of the fence, the next on either side of it is on the outside. In building the fence, the rails


BOLTED FENCE BARS.

are bored at one end; the posts are then bored, and the other end of the rail is bored to fit the hole in the post. This fence is easily and rapidly built, and one man can build it without help, as one end of the rails can be fixed to the post while the other rests upon the ground, and when the fence is all up the nuts may be screwed up tightly. Washers should be used between each head and nut and the rails, and if some paint is used around them the fence will be all the more durable.

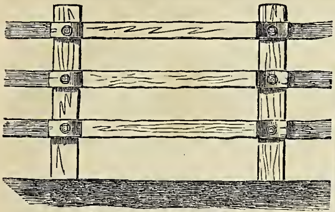


Fig. 2.—BOLTED FENCE.

Poultry-Houses and Roosts.

To keep several kinds of poultry in one building, but in different yards, is sometimes troublesome to the inexperienced fancier. It is necessary to be done, however, if each variety is to be kept pure. A method of arranging a poultry house for four varieties, is shown in figure 3. There is a square yard, divided into four parts by cross fences, and a house in the center, also divided into four apartments. The division and outer fences should be sufficiently high to prevent the birds from flying over them, pointed pickets nine feet high, would be required for the lighter varieties; six feet would be amply high for the heavier kinds, as the Asiatic fowls or Plymouth Rocks. Doors and windows are made in each apartment, as may be desirable. A passage way is made from the front gate of the yard, which leads to a central room, as shown in figure 2. Around this central room are the nests, which are reached by small doors opening into them. Roosts are put up in each apartment as shown. For the large fowls, low roosts should be used, as they cannot reach high ones without a ladder, and in dropping from them are very apt to injure themselves. A roosting frame, which we have recently made for some Light Brahmas, is shown at figure 1. It is made of chestnut strips two inches square, with the edges of the upper part rounded off somewhat, to make then easy to the feet of the fowls. Three of these strips are fastened to frames made of the same material for supports. The whole is fastened to the wall by rings fixed in staples, so that it can be turned up and held against the wall by a hook. It is 12 feet long, 3 feet wide, and 16 inches from the floor. We find this to be too high for some of the heaviest of the fowls, which have to be provided with stools upon which to step up to the perches. A poultry-house suitable to keep several kinds separate, is illustrated at figure 4. Originally this was made for the accomodation of a number of dogs, and was described in the "Journal d'Agriculture Pratique," of Paris, but it is perfectly well adapted for poultry. Its peculiarly French appearance gives it a picturesqueness which, with many persons, would rather add to its attractiveness than otherwise, but the style of the building may be varied to suit any circumstances. It is divided into a number of apartments, each leading into a yard, which is planted with fruit trees. The yards radiate fanwise from the building and occupy a square piece of ground. The apartments communicate with the front of the building, and a room may be there made from which each can be reached.

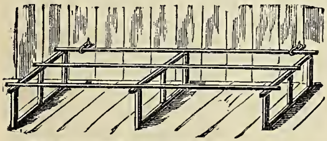


Fig. 1.—LOW ROOSTS FOR HEAVY FOWLS.

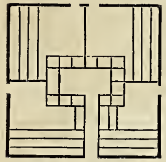


Fig. 2.—PLAN.

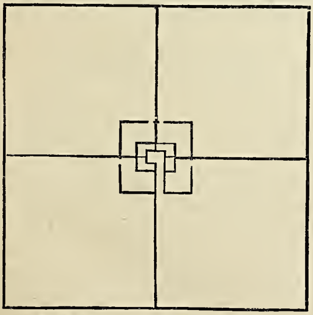


Fig. 3.—PLAN OF HOUSE AND YARDS.

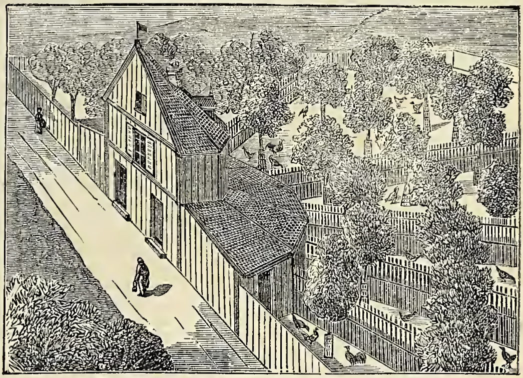
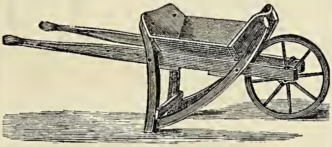


Fig. 4.—HOUSE AND YARDS FOR SEVERAL BREEDS.

A Farm Wheelbarrow.

The wheelbarrow is an indispensable vehicle on the farm and in the garden. Applied to hard uses it needs to be strong and durable. A barrow of the ordinary kind, used on farms, soon becomes weak in the joints and falls to pieces. The movable sides are inconvenient, and the shape necessarily adopted when movable sides are used, greatly weakens the structure. We saw a farm wheelbarrow at the Exhibition of the American Institute that was shown by the New York Plow Company of New York, who are the manufacturers, that is far superior to any others we know of, and have made an engraving of it, that its excellent points may be seen. It will be noticed at first sight that it is most strongly supported and braced, that the box, instead of weakening it, greatly strengthens it, and that it is stout and substantial. It is put together at every part by strong bolts, and can be taken apart to pack for transportation, if desired, and a broken part readily replaced. This wheelbarrow was highly commended by the judges of agricultural implements at the exhibition, which fact not only shows that it possesses, in their estimation, some novel and excellent points, but that these gentlemen, who were selected for their practical knowledge of such things, did not neglect a useful article because it happened to be an inconspicuous and humble sort of an implement.



FARM WHEELBARROW.

Remodeling Old Buildings.

Frequent inquiries are made as to the improvement of old farm buildings, either by adding to them, or by remodeling them in some manner so as to make them more convenient. Many old buildings are too good to tear down, but yet are so small, inconvenient, or ill adapted to increasing wants, as to need enlarging. We have before us an inquiry which is a type of many others. "A Farmer" sends a sketch (fig. 2) of his old barnyard and buildings around it, which he finds totally inadequate to his uses. The buildings are good of their kind, but are small, scattered, and situated without any order, and very inconveniently. At *a* is the barn, with a drive-way through it; at *b* is a small cow-stable for four cows; at *c* is a horse stable for two horses, with place for poultry adjoining, and an open shed, used hitherto as a pig-pen, is situated at *d*. A fence encloses a space used as a barn-yard. Room is needed for twenty cows with calves and yearlings; a bull; four horses; two loose boxes for cows and colts; a shed for implements, tools, wagons, and carts, and for the necessary number of pigs and poultry. To meet these requirements we suggest the following alterations, as shown in the plan seen at figure 3. None of the buildings are removed. If the foundations are not satisfactory, as is probably the case, the buildings are raised and solidly underpinned with stone, brick, or concrete; and the floors either laid with stone or concrete, or with plank, beneath which space is left open, so that vermin cannot hide and harbor. The barn is changed within, so that a cross passage is made on the main floor, at *a*, *a*, in the plan. Upon each side of the barn is a cow shed, *b*, *b*, holding 10 cows. An ample feeding floor is made at *c*, *c*, to which the cross passage in the barn leads. One of the apartments of the barn floor—it is immaterial which of them—is occupied

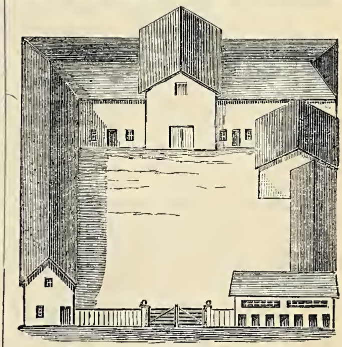


Fig. 1.—VIEW OF FARM-BUILDINGS.

as a feed-room. In front of the feeding floor are pens for calves, *d*, *d*, *d* ; a shed for yearlings is made out of the old cow-shed, at *e*, in which the young animals may be tied with chains, and taught something of the discipline to which they will be subjected hereafter. At *f* is an open shed for the yearlings; at *g* is the pen for pigs ; at *h* is the horse-stable for four horses, with a harness-room at the end ; at *i*, *i*, are two loose boxes for in-coming cows, or mares and colts, and at *j* is a stall for a bull. In front of the calf pens are two sheds for implements, wagons, etc. The barn-yard is in the center, and a wide gateway is placed in the front of it. Paving cobble-stones will keep the yard dry and clean, and no manure should be piled in it. There are doors opening out of some of the buildings, by which manure may be carted away, to be piled or spread. An isometrical plan, showing the elevation of the buildings, is given at figure 1. The plan may be modified to suit either the kind of buildings existing, or the necessities of any peculiar case, and while it is applicable to this particular farm, as far as possible, it is intended to be suggestive of what may be done in many other cases which are continually occurring. Before any old buildings, which may be sound, or good enough for repair, are torn down to be replaced with others, it will be well to study all practicable methods of remodeling them.

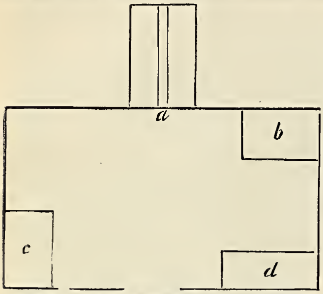


Fig. 2.—PLAN OF BUILDINGS AS AT PRESENT.

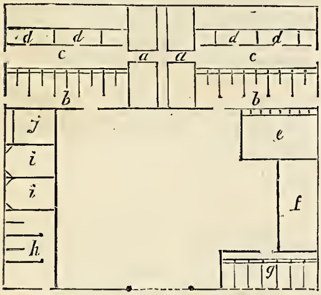


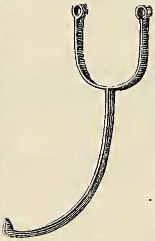
Fig. 3.—PLAN FOR REMODELING.

Division of Farms.

One of the wastes of the farm, from which much loss results, consists in having a number of small fields. No field, even upon a small farm, ought to be less than ten acres in extent. It is not necessary that the whole of this should be in one crop, for it may be apportioned into as many as may be found desirable. It is not only the ground occupied by the fences that is lost, but the margin of the field near the fence cannot be cultivated, and more ground is wasted there. The loss is greatly increased when the fences are crooked, and when weeds are allowed to grow up about them. In such cases it is well worth while to remove all the inner fences of the farm, and remodel the whole arrangement of them. The outer fence should be made perfectly safe and substantial, and if there is a pasture, a safe fence should be made between this and the plowed ground. The latter needs no division by fences, simple furrows or lines are quite sufficient to divide one plot or crop from another ; then all the ground is used and none wasted. If at any time one of these plots is to be pastured, or stock is to be turned into it, a temporary fence should be used. Many kinds of temporary and portable fences have been described and illustrated from time to time in the *American Agriculturist*, any one of which would be found useful for this purpose. The saving of ground by removing useless fences is very important. The smaller the fields, of course the greater the saving in proportion. For instance, a common worm-fence around a square field of three acres, occupies 8,280 square feet—about one-fifth of an acre—or about 7 per cent of the space enclosed. A similar fence around twelve acres, being four times the space, occupies only double the room ; a saving of 50 per cent in the ground occupied. If the space enclosed is 48 acres, the ground occupied by the fence is only four times that required for 3 acres, while the area of the ground is increased *sixteen* times. This explains the great waste occasioned by fencing a number of small fields, and the saving pointed out in having only a few, or one large field. Division fences are an enormous tax upon farmers, the cost of maintaining them, and the loss of ground occupied by them, and of the yearly produce which might otherwise be taken from this ground, is even more than the original cost. It is time something should be done to avoid this waste, and there is no better season for moving fences than the present one.

Poke for Breachy Animals.

The natural sagacity of a breachy animal will often enable it to overcome any ordinary restraint we may put upon it, and it becomes a strife between it and its owner, as to which is the most fertile in expedients. If we watch the efforts of a breachy animal to avoid the means used to keep it within bounds, they will go far to induce us to believe that it possesses powers of reasoning. It is necessary, therefore, that pokes, hobbles, or other devices for restraint, should be perfectly effective, and not such as may be circumvented by the animal, lest it learn new tricks and become worse than ever. Most of the pokes in use are either in the way when the animal is grazing, or if not dangerous, ineffective. One that seems to be all that can be desired in the way of a poke is here illustrated. It is made of horse-shoe bar-iron, and is provided at one end with arms and rings by which it is fastened to the animal's head, and at the other end with a hook. The poke is curved forwards so that when the animal approaches a fence, the end of the hook becomes entangled with the lower rail, and holds fast to it. When the animal is grazing, the curved form of the bar causes it to slip forward and remain out of the way. The hook should not be sharp, but simply a portion of the bar turned up but not pointed.



POKE.

CARRIER PIGEONS ON THE POLICE FORCE.—Mr. W. B. Tegetmeier, the well known poultry fancier and writer on matters relating to domestic birds, describes a new use to which carrier pigeons have been put in England. Their instinctive habits have there been made available for the assistance of the police in carrying messages from out-stations to the central office, or to the stations from any locality to which detectives have been dispatched. The utility of pigeons in this respect may be turned to good account when there is no telegraph station at hand, as a message may be conveyed to headquarters from some miles distance in a few minutes. It is not at all improbable that we may see this idea put in practice for detective purposes, and for conveying messages, in this country.

Tim Bunker on the Evils of Agricultural Fairs.

MR. EDITOR : Things are getting awfully mixed up here in Hookertown, and half of the time I can hardly tell whether I am in the "land of steady habits" or not. The last County Fair in Hookertown was not in good old style at all, if I am any judge. Joseph's coat of many colors was a very poor thing in comparison with the variety show they had up here. You see things have been getting worse and worse for several years.—After we cleaned out Col. Lawson who got up "the gal hoss race" just afore the war, we had decent times for several years.—That picture in the paper of the "set-to" between the "gals" with the ribbins and calico flying did the business for the Colonel and his style of Agricultural Fairs. He fell flat as a pancake, and Deacon Smith was put in President of the Society, and cattle, sheep, poultry, fruits and vegetables had a fair chance for several years. The fairs were well attended by farmers and their families, the Society got out of debt, and got money ahead to buy land and buildings for a permanent home. Several thousand dollars were distributed in premiums every year, and the horses did not get more than their share of attention. It was flush times after the war—money was plenty, and Seth Twiggs said the noses of people in Hookertown were getting elevated. Colonel Lawson came home from the war a Brigadier General, run for Congress, got elected for one term, and was elected to stay at home next time. The General grew uneasy, and by the aid of the livery stables and grog shops got in President of the County Agricultural Society once more. We were going to have several reforms introduced. There were to be greater attractions at the fairs—greater multitudes were to come out, the finances were to be improved, the grounds enlarged, and new buildings were to be put up for the accommodation of animals, so that the finest stock in the County would come to the fair. The new attractions centered the first year in a balloon ascension which emptied every grog-shop in Hookertown, left Smithtown with nothing but cripples and babies to keep house, and depopulated the White Oaks, so that there was not a dog left on the street. There was a big crowd, and a good deal of money taken at the gates, but a good many of the farmers could not see exactly "how a balloon raisin' was gwine to help farming." They were ready enough to admit that the machine was a big thing, the gas wonderful, and the fellow smart that went up like Elijah into the clouds, but the puzzle was to know what that had to do with farming. The next year the General wanted the track worked so that it should be as smooth as a house floor. The cattle would appear so much better as they passed round before the judges. The track was enlarged, thoroughly worked, and the judges saw the grand cavalcade. The next year the premiums offered on horse-flesh were greatly increased, and a little trotting was allowed against time. The competition was confined to horses raised in the County, and no outsiders were invited. Side shows began to come in—bearded women, dwarfs, hair-seals, devil-fish—monstrosities and peddlers of various wares. Every year the fair ran more and more to horse-flesh. The premiums for trials of speed were greatly enlarged. Outsiders came in with their fast nags. The General's style of Agricultural Fair culminated this year in a regular race course, with all its attendant evils of drunkenness, gambling, and fighting. About all the loose cash in the White Oaks was staked upon Kier Frink's stallion, a broken down race-horse, that has run in his coal cart for the last five years. He was fast once, faster than anything the White Oakers had ever seen. Shadtown smelt the battle afar off, and sent up its sample of five-year-olds, that had never run a race before. Hookertown livery stable had kept several horses in training several months for the various races that were put upon the programme.

It was kept in the dark that the Smithtown clique, with the General at its head, had the horses engaged from abroad that were to win all the large premiums, running from one to five hundred dollars. Pretty much every town in the County was represented on the track. The General and his managers baving made a sure thing of getting the best horses into the Smitbtown ring, could bet as heavily as they liked against the green horses tbat came in from the country. Everything was done for the benefit of the gambling fraternity. Tbe privilege of pool selling was sold for the benefit of the Society for the sum of $400, and a pool-wheel was run during tbe four days of the fair, so tbat every one migbt have a chance to put up his money. Then under the guise of encouraging the production of "Native Wine," and suppressing the evils of intemperance, a grog-shop was opened on the grounds, where all kinds of intoxicating drinks were sold out of bottles labeled "Concord Wine," "Catawba Wine," etc. Everybody in Hookertown knows that there is not a vineyard in the County, and that there are not half grapes enough raised to supply the table. "You might search every cellar in Hookertown," Seth Twiggs says, "and barring a bottle or two of Elderberry or Currant wine kept jest for sickness, you could not find any thing tbey called wine."—It answered the purpose of the gamblers just as well as if grape juice had been plenty in Hookertown. Tbe "Native Wines" were well patronized, the people were made wise and rich, and were ready to bet on their own horses without dreaming of a ring in Smithtown. The great races were run at the fair in October, and the White Oaks and Hookertown had an eye opener. Kier Frink not only lost his money, but his horse, for he was so sure of winning that he bet horse and all on the race. Jake Frink found out "tbat that 'ere wheel didn't turn but one way, and that was always towards Smithtown. Yer don't ketch me agin." George Washington Tucker and Benjamin Franklin Jones and their cronies at the livery stable used language that Parson Spooner would not approve of. Shadtown felt cheated, wouldn't stand it any way, attacked the Smithtown ring on their way home, and got soundly thrashed.

It seems to me, Mr. Editor, that our State and County Agricultural Societies need a good deal more attention from farmers than they get. Too often they are run by men of the General Lawson sort, who are not farmers, and who only want to use the fairs for their own benefit. The horse is of chief benefit to them as a means of gambling, which means cheating and robbery. Tbe track grows more prominent every year, and cattle, sheep, swine, poultry, fruits, and vegetables, are crowded into tbe back-ground. In some of the societies the Annual Show is mainly a horse-race, with its attendant evils, betting, high excitement, drunkenness, and quarreling. Men of good morals and quiet habits withdraw in disgust. It is no place for them and their families. These growing evils of our Agricultural Fairs should have attention at the annual meetings to be held this winter, and be remedied.

Hookertown, Ct., Nov. 10th, 1876. — Yours to command, Timothy Bunker, Esq.

Clearing Land by Blasting.

Sometime ago we gave an account of the use of dynamite or giant powder, in removing stumps and rocks from recently cleared wood-land, or old meadows, with some illustrations of the methods employed. The large number of enquiries for further information, we have received since then, made it advisable to experiment with this explosive in a practical manner, in order to thoroughly test its value. This we have recently done, in conjunction with the officers of the Atlantic Giant Powder Co., the manufacturers of the explosive. The ground selected was on the estate of J. Hull Browning, Esq., of Tenafly, N. J., who kindly gave the requisite facilities. The work was done by Mr. I. J. Werden, of Pittsfield, Mass., who of late has made a business of clearing land in this manner, and has operated on many stumps and boulders.

The explosive used is dynamite, or giant powder. It is a mixture of nitro-glycerine with some absorbents, by wbich this dangerously explosive liquid is made into a perfectly safe solid substance, of a consistence and appearance not unlike light-brown sugar. It is not possible to explode dynamite by ordinary accident, nor even by the application of a ligbted match. A quantity of it placed upon a stump and fired with a lighted match, burned away very much as a piece of camphor or resin would do, with little flame but much smoke, and boiled and bubbled until only a crust was left. There is not the least danger, therefore, of igniting the powder dangerously, until properly placed for the blast. In this respect it has a very great advantage over ordinary blasting powder, whicb may be exploded by a spark. Tbe powder, as it is manufactured, is made into cartridges about eight inches in length, and of any required diameter. Those used in this operation were 8 inches in length, but these may be cut into pieces with a knife, as may be required for use. The cartridges are wrapped in strong parchment paper, covered with paraffine, and the true form is shown at figure 1. They are fired by a cap, (also in figure 1), which is inserted into the end of the cartridge. The fuse, which is of the common kind, is inserted into the open end of the cap, which is pinched close upon it with a small pair of pliers, so as to hold it firmly. The cartridge is then opened at one end, the cap with tbe fuse attached inserted, and the paper is tied tightly around the fuse with a piece of twine. Tbe cartridge ready for firing is shown at figure 2.

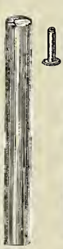


Fig. 1.

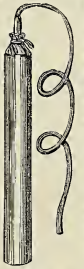


Fig. 2.

The first operation was upon a green white oak stump, 30 inches in diameter, with roots deeply bedded in the ground. To have cut and dug out this stump, with ax and spades, would have been a hard day's work for two or more good men. The shape of the stump is shown at figure 3. A hole was punched beneath the stump, as showu in the figure, with an iron bar, (fig. 4), so as to reach tbe center of it. Two of the cartridges were placed beneath the stump, and were tamped with some earth; a pail of water was then poured into the hole, which had the effect of consolidating the earth around the charge. Tbe fuse was then fired. Tbe result was to split the stump into numerous fragments, and to throw it entirely out of the ground, leaving only a few shreds of roots loose in the soil. Tbe result is shown in figure 5, on the next page; the fragments of tbe stump in tbe engraving were thrown to a distance of 30 to 50 feet, and many smaller ones were carried over 100 feet. The quantity of powder used was less tban two pounds. A portion of the useful effect produced by the explosion, consisted in the tearing of the stump into such pieces as could easily be sawed up into firewood; by which much after labor in breaking it up, when taking it out in the usual manner, was saved. This test was perfectly successful, and proved not only the thorough effectiveness of the new method, but its economy in cost and in time. Several otber stumps were taken out in the same manner; the time occupied with eacb being from five to ten minutes. Smaller stumps were thrown out with single cartridges, and in not one case was anything left in the ground tbat might not be turned out with the plow, or that would interfere with the plowing of the ground. The explosive was tben tried upon a fast rock, of about 150 cubic feet, weigbing about 10 tons. Tbe shape of the rock before the explosion is shown at figure 6. A hole was made, witb the bar, in the ground beneath the rock, and three cartridges were inserted and exploded. To have produced this result (shown at figure 7, on page 20) by the ordinary method, that was here done in a few minutes by one man, would have occupied at least two men with drills, sledge, etc., two or three days. The application of this metbod is seen to be of great value where the saving of time is an object. An acre of stumps or rocks may be cleared in one day by one or two men, and the material left ready for use as firewood, or as stone for fences or buildings. The cost in money is also reduced in some cases very considerably, and almost absolute safety to the careful operator is ensured. It would be generally advisable to secure the services of an expert, and that the parties who have work of this character to be performed, should jointly engage such a man who could either do the whole work, or to do it in part, and instruct a foreman or skillful workman sufficiently in a day to perform the remainder. The most favorable seasons for operating upon stumps and rocks are fall and spring, when the ground is saturated with water. It should be explained that this explosive is not injured by water, altbough a long continued exposure to it would affect some qualities of it.

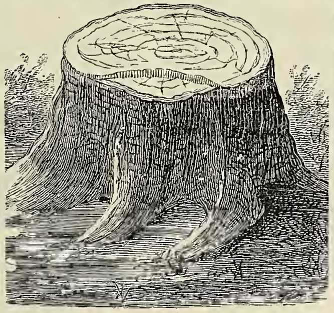


Fig. 3.—THE STUMP BEFORE THE EXPLOSION.

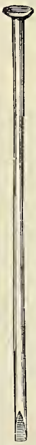


Fig.4

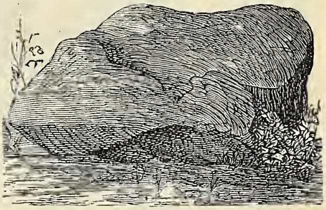
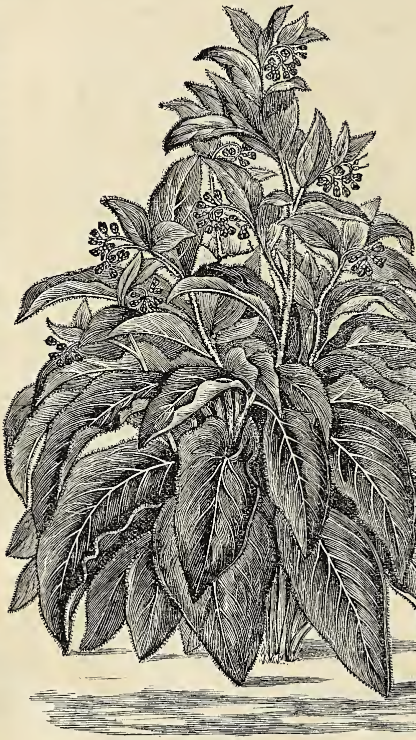


Fig. 6.—THE ROCK AS IT WAS.

The Prickly Comfrey.

Nearly two years ago we received from England a circular concerning the Prickly Comfrey, which made most extraordinary claims as to its value as a forage plant, accompanied by equally extraordinary engravings. Having seen so many of these wonderful plants "go up like a rocket" at the expense of credulous cultivators, and then "come down like a stick" to the great disgust of the cultivators aforesaid, instead of putting the matter before our readers, as we were requested to do, and run the risk of disappointing many of them, we preferred to quietly procure the plant and make ourselves somewhat acquainted with it, before saying anything about it. The drouth of last summer quite interfered with our plans. Our experimental garden has a very light sandy soil, which in most seasons is preferable for our purposes to a stiff heavy one, but in the exceptional summer just past all the plants suffered heavily, and it is nothing against the Prickly Comfrey that it succumbered under conditions which native trees, for several years established, could not survive. One reason for cultivating the plant was that we might have materials from which to make a drawing, as we were sure that the engraving above referred to could not be accurate. While we were working up the matter, by a singular coincidence our associate, Col. Waring, was, unknown to us, experimenting with the same plant, and in his Ogden Farm Paper intended for December, surprised us by "stealing our thunder." What he said about the Comfrey was withheld until an engraving should be ready, and with a description appear with his account of its uses. Knowing that our friend, Thomas Meehan, had the plant at his most comprehensive nursery at Germantown, Pa., we obtained a specimen from him, and with the aid of this and an accurate colored plate just received from England, the engraving here given was made. The botanical name of the plant is *Symphytum asperrimum*, which readily translates into very rough, or "Prickly Comfrey." *Symphytum* is from a Greek word meaning *to grow together*, as the common garden Comfrey had formerly a reputation for healing qualities, a notion which the common name Comfrey also conveys, that being from the Latin *confirmo*, to strengthen. We may add that the root has no marked properties, being simply mucilaginous and slightly astringent, and like many other plants formerly of high repute, owed its reputation chiefly to its harmless qualities; these did not prevent a recovery which was, of course, attributed to the medicine, while it took place in spite of it. The Prickly Comfrey is a native of the Caucasian mountains, where it grows at altitudes varying from 1,800 to 6,000 feet. It is a perennial, with a very large thick and branching root. It produces a large cluster of long petioled leaves, which are 18 inches long, the petiole, or leaf-stalk, being 12 inches long; the lower part of the blade of the leaf is either rounded or wedge-shaped, and on its lower surface, on the mid-rib and veins, are roughish bristly hairs, which suggested the specific name; the leaves, when young, are often quite woolly and hairy. The flower-stalk has its upper leaves sessile, or without any leaf-stalk, and flowers, somewhat smaller than in the garden Comfrey, of a blueish purple. The plant is readily multiplied by division, taking care to secure a bud with each portion of root, or it may be propagated from cuttings of the roots. Col. Waring (see "Ogden Farm Papers") cautiously states the claims made for this plant abroad, and gives some points from his own experience. Since his article came to hand, we have had some correspondence with Mr. C. E. Ashburner, Edinglassie, Richmond, Va., who, after many experiments to find a fodder-plant suited to the country, thinks that he has found in this Comfrey "something worth having." He writes: "I do not find its virtues very much exaggerated in the published accounts; on the contrary, I am sure that the yield the first year, which is put down at 20 tons, is considerably understated." The following detached sentences from several letters are in response to our questions, the nature of which will be implied by these answers: "It may be cut six times a year, at least. I have cut some plants eight times the first year, and grazed them with cows and horses besides."...."It is perfectly easy to cut the plants with a sickle, or any other kind of a cutting knife."...."The leaves of the *Symphytum* can be stacked green (or partially dried), with a little salt between the layers, and will keep well through the winter."...."I have not tried to raise any plants from the seed, as I have invariably cut the stems as soon as they showed any signs of flowers; the leaves grow much more vigorously if you do so."...."The plants do not grow to their largest size until the second year."....He further adds: "There have been several severe frosts lately (Nov. 16th), but in no instance has the smallest damage been done to my plants, old or young. I have many thousands now just out of the ground, but so far frost has not touched them. I am still feeding my cows, horses, and pigs, on the Comfrey, which is growing every day. * * * I am so well satisfied with the plant that I am planting largely, and am quite sure that it cannot fail to come into general use in the Southern States, where fodder is scarce."—We may add to this interesting home testimony, that of M. J. A. Barral, one of the most prominent agricultural writers of France, and Secretary of the Central Society of Agriculture. In the Journal of that Society for Oct. last, he states as his experience with the Caucasian Prickly Comfrey: "The animals thrive well upon it, and that in the green state it contains 4 per cent of nitrogen and is equal in richness to green maize. The total of nitrogenous substances is about one-



PRICKLY COMFREY.—(*Symphytum asperrimum.*)

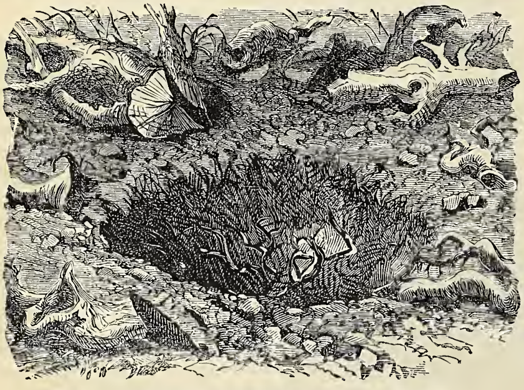


Fig. 5.—THE EFFECT OF BLASTING THE STUMP.—(*See page* 19.)

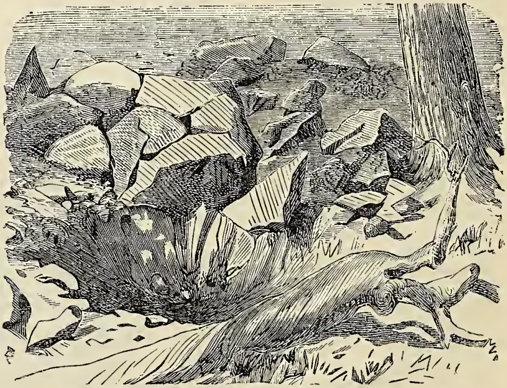
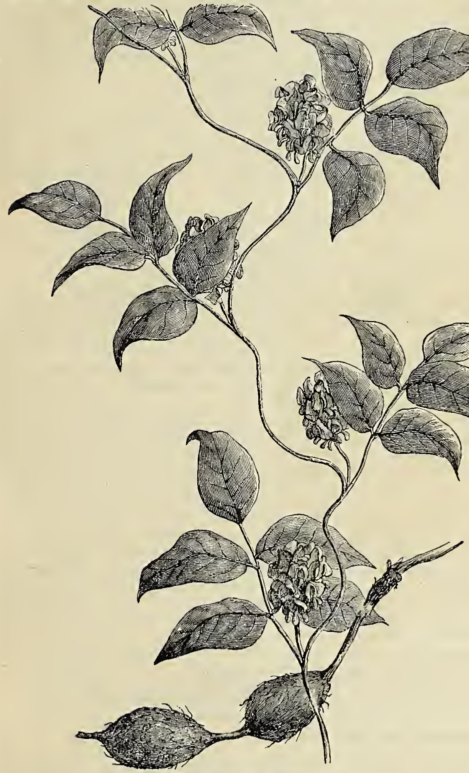
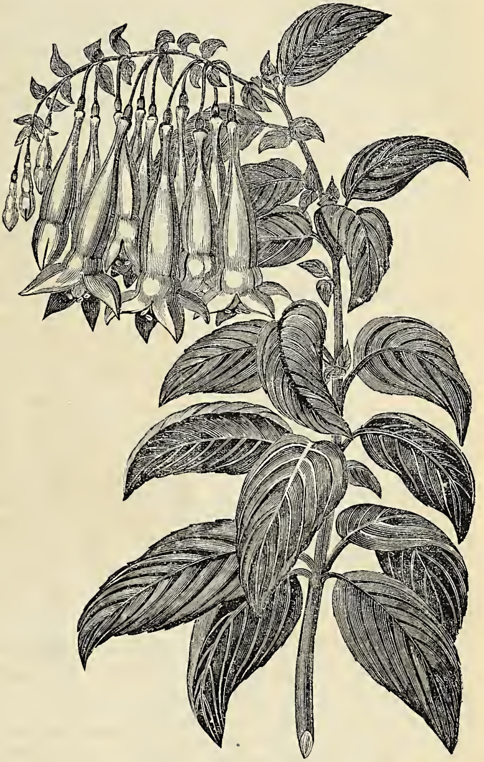


Fig. 7.—THE ROCK AFTER BLASTING.—(*See page* 19.)

third, [meaning, no doubt, one-third of the nutritious constituents, and not one-third of the whole—Ed.], and which justifies the high opinion that cultivators who have tried it have formed of the plant." Looking upon this testimony from disinterested parties, we are warranted in presenting the Prickly Comfrey to our readers as a plant well worth trying, and we may add that neither this nor any other plant will produce a large yield of nutritious forage from impoverished land or under neglect. "Out of nothing, nothing comes," is a proverb that finds an application in agriculture, as well as in other human affairs.



THE APIOS OR GROUND-NUT.



THE RACEMOSE FUCHSIA.—*(See next page.)*

* * *

The Apios or Ground-Nut.

For a long time this plant has been on a memorandum of the subjects to be presented to our readers, and now that Prof. Gray explains the remarkable mechanism of its flowers, it seems appropriate that we should say a word about the plant itself. The plant, *Apios tuberosa*, has a wide range—from Canada to Florida, and from the Atlantic Coast to the Rocky Mountains. Below ground it produces numerous small tubers, which are strung at intervals, like beads, on a slender underground stem. The stems grow from four to twelve feet long, twine over other plants, and bear at short intervals compound leaves, consisting of two or three pairs of leaflets, and an odd one, that is, they have from five to seven leaflets, which distinguishes it from all others of the proper Bean Tribe, which ordinarily have but three. Both stem and leaves are usually smooth, when old, but in the far West are more or less downy. The flower-clusters appear in August in the axils of the leaves, on stalks an inch or two long, and the clusters themselves are about the same length, much crowded and sometimes branched. The individual flowers have their curious structure so well described and illustrated in Prof. Gray's article, that it would be superfluous to add anything upon this point. The flowers, while not showy, are interesting on account of their form, and their unusual color, which is a chocolate purple, with some tinges of green and flesh-color. What they lack in beauty of color, is made up in fragrance, for there are few of our wild flowers so delightfully scented, their perfume recalling, though not precisely like, that of the European or Sweet Violet. The pod is three to five inches long, curved, and containing numerous dark purple seeds. The engraving, which shows a portion of the stem, is much reduced. This is one of the wild plants that is well worth cultivating, and while it is commended in most European works upon flower culture, it is scarcely known to our gardens, though its merits did not escape the observation of the excellent late Mr. Breck, who mentions it in his useful "New Book of Flowers." It is a plant that may be made useful in many situations, and if one has a corner for a wild garden, it may be introduced there, and allowed to ramble. Not the least of its merits is its late flowering, coming into bloom at a time when flowers, and especially fragrant ones, are scarce, it needs only to be known to become popular. European florists offer the tubers, but we doubt if they are to be found on sale in this country. Fortunately the plant is not rare, and those who meet with it in their walks, should mark the place, and dig up the tubers when they have matured. The tubers afford the most ready means for the propagation of the plant, and may be kept out of the ground for some months without detriment, if not allowed to become too dry. The tubers, often numerous, are seldom over an inch in diameter. Our engraving is drawn from a dried specimen in the herbarium; while looking through our library for some illustration that might assist the artist in making his drawing, we came across the first representation ever made of the plant, in the "History of Canada Plants," by Jacob Cornuti, Paris, 1635. This quaint old copperplate shows the plant, filling a whole page, and elaborately trained to a trellis, with strings of tubers running to the right and left across the page, in great profusion. These tubers are said to be pleasant to the taste when cooked, and they afforded a portion of the food of the Indians, who, according to Kalm, called them "Hopniss." When the potato-rot threatened to cause the potato to be abandoned, the tubers of this plant were among the many substitutes proposed, and were introduced as the "Dakota Potato," its real name being kept secret. No doubt, some of the speculators of that day turned the matter to good account; but as an esculent it proved a failure. Those who have the *American Agriculturist* for twenty years or more back, will find various reports of the want of success of those who tried it, some claimed that in cultivation the plant produced smaller tubers than it did when wild. Some writers describe them as growing to the "size of an egg;" if a hen's egg is intended, we must say that, though we have dug up a good many, we never saw one larger than, if so large as, a pigeon's egg.

The name "Ground-nut" is an unfortunate one, as there is nothing nut-like about the plant. The botanical name, *Apios*, from the Greek word for *pear*, referring to the somewhat pear-shaped tubers, is a pleasant-sounding one, and easy to recollect, and it is in every respect preferable to "Ground-nut," which is often applied to pea-nut, as well as to some other plants. The early botanists placed this and the Wistaria in the genus *Glycine*, which is now restricted to a few tropical bean-like plants. There are two other species of *Apios* besides *A. tuberosa*, one growing in China, and the other, which is said to have handsome red flowers, in the Himalaya mountains.

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The Racemose Fuchsia.

The varieties of Fuchsia are very numerous, and each year adds its novelties to the list. While a few of those in cultivation preserve the original form of the species, the majority, and those among the most beautiful, are produced by hydridizing and crossing. There has been such a commingling of blood, as breeders say, that it is impossible to trace some of our most prized varieties to their parent species. While we admire these productions of the florist's skill, we also like to see the unaltered species in cultivation, and are glad that another —*Fuchsia racemosa*—has been recently added to our collections. This species is far from being a new one, as it was described nearly a hundred years ago, but if it ever was in cultivation, it has long been lost, and now has all the interest of a new discovery. The plant has a spreading habit, throwing up numerous suckers from the root, and thus forming large clumps, from one to two feet high. The engraving of the upper portion of a stem gives the form of the leaves and flowers of the natural size. The flowers, which are clustered at the top of the stem in a raceme, are very narrow in proportion to their length; the petals, which in most other species are so conspicuous, are in this very nearly of the same size with the divisions of the calyx, and both are very nearly of the same color, which is a very bright scarlet, and exceedingly showy. The plant was collected several years ago by Thomas Hogg, Esq., in the mountains of St. Domingo, where Father Plumier originally discovered it nearly two centuries before, and described it in 1703, it being the first Fuchsia ever described, and the one upon which the genus was founded. It was exhibited at one of the exhibitions of the New York Horticultural Society, where it was examined with much interest by the florists present, who looked upon it as a novelty of great promise. The stock of the plant passed into the hands of Mr. Peter Henderson, who will no doubt offer it for sale in due time. Coming from the high mountains of San Domingo, it may prove much better suited to bedding purposes, and endure our hot summers much better than those which are descended from natives of the warm and moist forests of Mexico and South America. We have not had an opportunity to carefully examine this plant in bloom, but have no doubt that Mr. Hogg has manifested his usual accuracy in referring it to *Fuchsia racemosa* of Lamarck.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE IX.—GROUND-NUT OR APIOS.

Our long story about Beans and their relatives was not quite finished in the October number. There is a wild Bean worth noticing for the curious difference between its arrangement for fertilization, and that of the common Bean-flower. I hardly know which is the more curious; but the one now to be described has the greater novelty. Indeed, I had the pleasure of finding it out only a year ago last summer. The plant in question abounds in low grounds, especially along streams, and climbs by twining up the stems of herbs and over bushes, and is described by the Editors on another page.

It is with the flowers only that we have now to do. They are like those of Beans in form and arrangement, with a little difference. The wing-petals stand forward, and make the same kind of landing place. But the weight of a bee or other insect alighting on them has no such effect as upon the Bean-flower, indeed does not alter the position of the stamens and pistil at all. The part of the flowers which encloses these (the *keel*, so called), is curved, not into a coil, as in beans, but into the shape of a sickle or semicircle. The tip of this keel rests firmly in a small notch or indentation at the middle of the top of the *standard*, the large and hollowed petal—in shape not unlike a ladies' bonnet of the olden time, when bonnets were ample—which forms the whole back-side of the flower. The keel remains fixed in this way, if the flower is let alone, spanning across the middle of the deep cavity, which opens to the bottom of the flower. Figure 3 represents a flower-bud, cut through lengthwise, so as to show the pistil within, and some of the stamens. The way in which the end of the keel rests in the notch or pocket, is best seen in figure 4, which, on a larger scale than figure 1, represents a flower, with the part of the standard coming towards the eye, cut away, to give a clear view. The tip of the keel is not dislodged from its socket by any moderate jar, nor by pressing from the outside. But when, in any fresh flower, we raise the tip by a lift with the point of a pencil from underneath, the keel promptly curves more, and takes the shape and position shown in figure 2, at the same time splitting from the apex down the inner edge, and protruding the tip of the style, and, in a less degree, the opening and pollen-laden anthers.

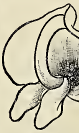

Fig. 1. *Flower unvisited.*

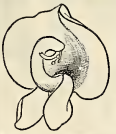

Fig. 2. — *Flower which has been visited by a bee, and the keel sprung.*

Figure 5 represents, in outline or diagram, the change which takes place when the tip of the keel is dislodged from the socket. The dotted lines show the position of the trap—as we may call it—when set; the strong curvature shows it sprung.

How this contrivance subserves cross-fertilization, it is easy to see. I am confident that the blossoms are seldom, if ever, self-fertilized. The anthers from the first lie a little behind the stigma, which is small, and at the very tip of the naked style. Upon opening several flowers of various ages, even when the pollen lay loose in and around the bursting anthers, none was found upon the stigma. At first the stigma is covered with a pulpy secretion; at last, when the stigma developes fully, and the center is free from this pulpy matter, this forms a soft ring around its base, over or through which no pollen passes. Nor is it likely that any pollen reaches the stigma when this and the anthers protrude upon liberation from their confinement. This liberation, I am convinced, ordinarily takes place only upon the visit of a bee, or some such insect, which entering, at least partially, into the open cavity of the blossom either side of the keel, presses the latter upward from beneath. The strong tendency to further curvature of the whole keel, and especially of the pistil, which before simply pressed the tip into its socket, and so held all fast, now takes effect, and it coils in the way shown in the figures; during which the stigma, and then the anthers are likely to be brought into contact with some part of the insect's body; and so, when flower after flower is visited, cross-fertilization must needs be effected. Equally, too, when a bee visits a blossom, which has been let loose, if it enters upon the side towards which the style swerves (as it always at length, if not immediately, does, either to right or left), the stigma will first be touched, probably by a pollen-dusted portion of the insect's body, and then the anthers will give a new supply of pollen for the next blossom; and so on. To understand this well, compare the account and the figures with those of the common Bean, in the October number, and admire the wonderful contrivance, by which the same kind of flower is modified in the two cases, so as to produce the same result in two different ways. Both are equally good for cross-fertilization, receive full explanation upon that supposition, and are unintelligible without it.

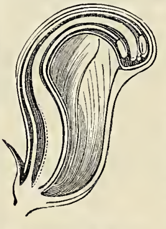

Fig. 3.—*Section of flower-bud, enlarged.*

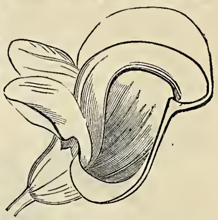

Fig. 4.—*Enlarged flower, with a part of standard cut away, showing the keel in place, and the socket in which the tip of the keel is held fast.*

I have two reasons for affirming that the flowers of Ground-nut do not self-fertilize. First, as here shown, the structure seems to forbid it. Second, growing here in the Botanic Garden, and blossoming profusely, not a pod has been seen for the last two years; and in the neighboring low grounds, where it abounds, fruit is rare. It must be otherwise in some places or some seasons, for the herbarium contains copiously fruited specimens. The blossoms are dull in color; but their delicious fragrance must appeal to the acute senses of bees. Here, in fact, as in most Orchids, the arrangement for cross-fertilization is so perfect and special, that, if not responded to, reproduction by seed fails. Now in this respect it differs from peas, clover, and the like, which can and do self-fertilize more or less, and so make sure of some seed. Even the bean-flower secures a margin for self-fertilization when it can no better be. When we depress the wing-petals, and bring out the stigma and the brush behind it, (see October number), any pollen which does not adhere to the brush is pushed forward so far that, when the style retracts, some of it reaches the stigma. In an early article upon the subject, (as far back as 1857), to which my attention has just been recalled, Mr. Darwin says that he fertilized some bean-flowers tolerably well, while protected from bees, by pressing down the wings so as to effect this movement.

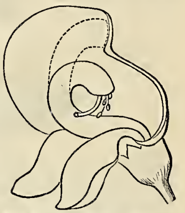

Fig. 5. — *Diagram, showing same, with the keel sprung, and stigma and style protruding.*

Facts of this kind, and the setting of some seed when blossoms are covered, have been appealed to as evidence that such contrivances as we have been describing are merely something odd, perhaps unaccountable, of no material importance to the race, possibly even a disadvantage. But a little reflection may convince any clear-headed reasoner that occasional or even frequent close-fertilization is no argument against the advantage (or the ultimate need) of cross-fertilization. Cross-fertilization, we may well believe, is the best thing, but is risky. Cross-fertilization, tempered with self-fertilization —which is the commoner case—is practically the best on the whole under ordinary circumstances—is the compromise between the two risks, viz.: failure of vigorous and fertile posterity on the one hand, and failure of immediate offspring on the other. "Get money, honestly if you can, but—get money," was the advice of an unscrupulous parent. Get fertilized, cross-fertilized if you can, close-fertilized if you must—is Nature's golden rule for flowers.

"Wire-Worms," and their Work.

With insects as well as plants, common names are used very loosely, and lead to confusion. Thus "Cut-worm" is a name given to the larvæ of insects of widely different families, and the name "Wire-worm" is applied to the larvæ of insects, and to animals that are not proper insects. Not long ago a correspondent at Montreal, Canada, complained that "Wire-worms" were doing great damage to his flower-beds, and asked what could be done to destroy them. Unlike many who ask such questions, he sent specimens that enabled us to know what he was talking about. His pest was not a worm proper, nor the larva of an insect, but one of the *myriapods*, or *millipedes*, as they are called, belonging to the genus *Iulus*, of which there are several species, one of which is shown in the engraving. These have long, cylindrical, shining bodies, made up of a great number of horny, arched divisions, the most of which bear two pairs of legs; they have two short feelers at the head, are mostly of a blackish or dark brown color, and when disturbed, roll themselves up into a coil. Our species are from an inch to an inch and a half long, but there is one in South America, having a length of six or seven inches. As the books generally say that the species of *Iulus* feed upon decaying vegetable matter, and some state that they are beneficial rather than injurious, we thought the correspondent referred to must be in error as to the cause of the damage, and asked for further particulars. He replied as follows: "I planted out last spring a good-sized bed of carnations; two-thirds of them where cut down in about a fortnight, and I could trace it to nothing else than these worms, with which I found the bed to be infested. I removed the balance to another part of the garden, and saved them. I then examined some of the lily bulbs in the next bed, and found some of the living bulbs partly eaten, with the worms in them. I have destroyed large quantities this autumn, by slicing apples and turnips, and laying them on the infested beds, the worms collecting under them in masses, which were removed and burned."—Testimony so positive from an evidently intelligent and careful observer, induced us to look up the authorities at hand more carefully than before, to see if the destructive habits of the *Iulus* had been noticed by any one else. Westwood, the eminent English entomologist, says that "they feed on animal and vegetable substances in a state of decay." Smee (Eng.) is "by no means certain as to the functions" they perform, and quotes Boisduval as saying that one *Iulus* is "a friend to the gardener." Among American authors, a writer in the "American Cyclopædia," and others, including Morse, the most recent of all, say that they live on decaying matter. Packard indefinitely says, "they live on vegetable substances, or eat dead earthworms or snails." After a long hunt we came upon some light in the "Practical Entomologist," by the lamented Walsh, which, like its successor, the "American Entomologist," was too good to last. Here, in Vol. 2, p. 34, (Dec., 1866,) we find a complaint of the destruction worked by an *Iulus* in the strawberry plants, and other plants, by eating their roots. Mr. Walsh says: "So far as is recorded in such authors, as are accessible to me, and so far as my own experience extends, all other species of the *Iulus* live on decaying vegetable matter, such as rotten wood." Finding this to be a new species, Mr. W. goes on to describe it as *Iulus multistriatus*, which is the species here figured. It is 1.15 inch long, brown, with most of the joints marked with numerous minute striæ or lines. What is quite singular, Mr. Walsh suggests just the same means of destroying the "worm," as that hit upon by the Montreal correspondent, only instead of apples and turnips, he suggests carrots, potatoes, or parsnips, which, he thinks, might be laid under pieces of board. It is quite strange that recent writers should have overlooked the matter, and that Packard, while he mentions the species, omits to give its most important character, in a practical view, and to state that it is really destructive. The fact that, while most of the Lady-birds are useful in destroying other insects, one species is a most destructive vegetable feeder, finds a parallel case in the *Iulus*, and shows that it will not do to infer, because some species have habits in common, all of similar structure are like them in these respects. It must now be admitted, that at least one *Iulus* is to be regarded as an enemy, and to avoid confusion, instead of calling it a wire-worm, or what is worse, "*the* wire-worm," let it be a Millipede. The very simple remedies above mentioned seem to be fairly successful. If any better ones are discovered, we hope that our friends will inform us of them.

"WIRE-WORM."—*Iulus*.

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KILLING THE "CABBAGE WORM."—The caterpillar of the European Cabbage Butterfly, *Pieris rapæ*, is without much regard to accuracy generally called the "Cabbage Worm." Though it is but little troublesome now in the localities where it first appeared, there are still many places where it has proved very destructive the past season, even ruining whole crops, and it is likely to continue to be a source of loss to cultivators in various parts of the country. Fortunately the natural enemies of the insect, especially insect parasites, increase with great rapidity, so much so that in places where a few years ago it seemed as if cabbage culture must be abandoned, the number of the "worms" at present is not sufficient to cause any serious loss. But cabbage growers cannot afford to feed successive broods of the caterpillar, until they in turn feed foes that will increase and in time destroy them, but prefer to kill them at once. We have published the various remedies that have been proposed, but we have not seen any that strikes us as so feasible as that proposed by the "Toronto Globe." It is simply hot water, applied by means of an ordinary watering pot. Those who have not tried it, are not aware that plants will bear with impunity water so hot, that one would suppose that it would kill them at once. By starting with water boiling hot, or nearly so, it becomes somewhat cooled by the time the cabbages are reached, it is cooled still more in passing through the air in applying it, and the cabbage leaves are so thick that they do not become suddenly heated, so that by the time the water touches the plant, it is hot enough to kill the caterpillars, and not sufficiently so to hurt the plant. It is of course, like other applications, most effective on the young "worms." One great difficulty in fighting insects of any kind, is due to the fact that they are not taken in time, but left until they have taken full possession. Cultivators of cabbages, cauliflowers, and the like, should note this for trial next season.

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A NEW CANKER-WORM GUARD.—All the attempts to combat the destructive Canker-worm, depend upon the fact that the female perfect insect or moth is wingless, and after she comes out of the earth can only ascend the tree to lay eggs for her mischievous brood by climbing up the trunk. Surrounding the trunk with some obstacle that the insect can not pass would seem to be a simple matter, but there have been numerous inventions to accomplish it, many of which will answer if properly attended to, but none will be perfect safeguards if left to themselves. Most of the inventions provide some adhesive material, like tar or printer's ink, or some liquid like oil, over which the insect can not pass. These, if not looked to, will become bridged over by dust, or by the dead insects, and as soon as a passage way is found the mischief is done. Mr. John Bryan, of Conn., has invented a guard to which none of the above objections will apply. It consists of a stout band of vulcanized rubber, about an inch wide; along the center of this are closely stuck ordinary pins, in a close row, and project about an inch. When this strip is tacked around a tree it presents a collar of pin points outward. According to the inventor, it is impossible for the female moth to crawl over this. The pins are inserted by machinery and the affair is not expensive. This new invention is called the "Elm City Tree Protector."

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Pass It Along.

To hoard up treasures, or to waste them uselessly —both are sins against society. Everything should be put to some use. Yet, let us not forget that there is use in beauty, nor demand that things which minister only to the finer tastes, shall needlessly be made to serve the grosser appetites. I say "needlessly," for I think no thoughtful member of the great human family, will love to lavish much upon his or her "finer tastes," when surrounded by neighbors who are suffering for the most common necessaries of life. There is neither beauty nor utility in packing away, merely for preservation, articles that could give pleasure or comfort to human beings, though no longer serviceable to ourselves, simply because they are ours. It shows ill-judged economy, or pure selfishness.

I think we might all afford more generosity in our daily lives. We might trust ourselves—or rather we might trust the great Giver—and share more freely with those who have need, without worrying about our own to-morrow and its supplies. What would happen, do you suppose, if all the members of all the churches should suddenly come a great deal nearer than ever before to obeying that most trying test put to the young man of great possessions, who desired to be a follower of Jesus?—"Sell all that thou hast and give to the poor; then come and follow me." A good deal of common sense would have to go along with the attempt to obey such a command.

But only think of all the chests and closets full of out-grown or old-fashioned, but strong and warm garments, to be found in many houses at whose doors the wolf never howls, and where winter's frosts cause no alarm. Then think of the suffering poor, whom we "have always with us." A great deal of thoughtless wickedness is practiced in cutting up for carpet rags or for linings, garments which might do a great deal of service somewhere, in their present shape. I never thought of this until a friend took me to task, many years ago, for cutting up a good sack for some trivial purpose, because I did not care to wear it. "Only think of all the stitches in that sack!" she said. "When a garment has been cut out and made, it ought, if possible, to be worn out in that shape." I thought so too, when I came to look at the subject. For this reason, good garments should be made with simplicity, so that they may never look "old-fashioned," in an offensive sense.

In some families it is customary to pass baby-clothes from one to another, as different mammas have need of them, and this practice tends to the increase of sisterly love and sympathy. The world will gain by it, as such affection and helpfulness overflow their family limits, until the stranger and the poor feel their effects. A common sorrow, or a common danger, draws human beings together, irrespective of the old barriers of family, sect, or nation. In times of war, or pestilence, people begin to feel their dependence upon each other. There are so many charitable "Homes" and "Children's Aid Societies," calling for help, that no one ought to feel justified in hoarding unused old clothes, which have warmth and comfort in them. "Charity begins at home," but it will not live and thrive, even there, if always kept at home.

It is not at all fair for those who can afford to purchase reading, to keep it all to themselves, while poorer people about them are hungering for something to read. Self love itself, should lead us to do all in our power toward educating our neighbors, so that we and our children have good and intelligent society. How childish are those men of wealth who shut their fine galleries of paintings entirely from the public, imagining that they somehow get more pleasure from such exclusive possession of coveted treasures, than they could if the treasures were open for the enjoyment of others.

Allowance for Growth in Children's Clothes.

These little boys and girls shoot up so fast, that garments made just right at the beginning of the season, seem to have shrunken in their proportions before the season closes. To avoid this, some mothers dress their children in garments made so long and loose that they are worn to tatters before their wearers have grown to fit the clothes. One extreme is as bad as the other, or perhaps a little worse; for if garments ever fit, it might as well be when they are fresh and new. I saw a little girl six years old, wearing the same woolen dress that was made for her when three years old. It had been made with the skirt turned up almost double, and with large seams, capable of "letting out." Afterwards the skirt and sleeves were pieced down under a row of trimming. It struck me as a little too bad, to oblige the child of three to carry about her the cloth needed to clothe her two or three years afterward. There were younger children, and it would have been quite as good economy to have passed the out-grown garments of the elder one, along down the ranks, to be worn by the one they best fitted. A little dress, of good material and well made, will do service for three or four young children, a season each. It is always best to make allowance for a child's growth in measuring its new clothes, but care must be used not to burden it with unnecessary weight. Skirts of flannel or felt should not have deep tucks, as they are not only increased in weight, as a consequence, but are thus made more bungling, and fit to the figure less warmly. Skirts that have become too long for their growing owners, can be pieced down with some kind of trimming. Often a plain strip of some darker shade of the same color, improves the appearance, while it enlarges the garment. A cuff of the same on each sleeve, and a strip for a belt, if needed to lengthen the waist, may all be added without much trouble, and this is better than letting out burdensome tucks in heavy material.

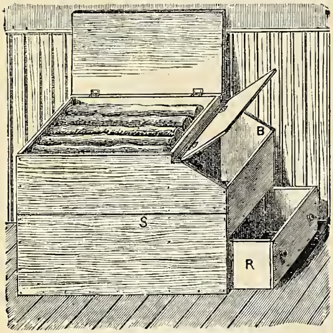


Fig. 1.—CONVENIENT WOOD-BOX.

Danger from Sugar.

In several journals I have lately seen warnings against the indiscriminate use of sugar. In the November number of the *American Agriculturist*, I find it in "Bee Notes" as follows: "In selecting sugar, avoid that having a bluish tint, as we have proof that it contains poison that will injure the bees. The same advice might be offered in regard to buying for family use."—I heard one of my neighbors complain of her white coffee sugar, which could not be used to sweeten cake or coffee, and had a bluish-green tint.

We are told that the old-fashioned methods of refining sugar by means of bullocks' blood, and other harmless materials, have been superseded by the use of poisonous chemicals, and that these are not all removed, but remain partially in the sugar as poisons. The purest and best sugars are the hard and white, or the coarse granulated. The brown sugars, which many consider sweeter than white sugar, are actually less sweet. They seem sweeter, because they dissolve more readily in the mouth when tasted.

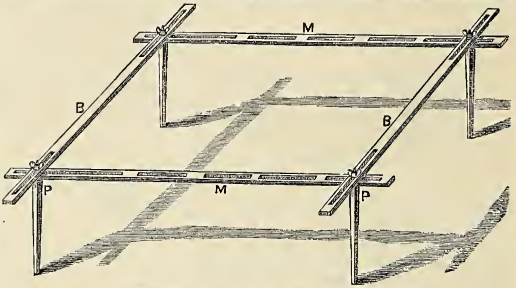


Fig. 2.—IMPROVED QUILTING-FRAME.

I don't see any necessity for using much sugar or molasses, but most people differ with me. It is indeed an important element of food, but nearly every article that we eat contains a certain percentage of sugar, in a healthy form, and if the cooking is done so as to preserve the natural proportion of saccharine matter, the needs of the body are amply satisfied. I have seen children, (and their need of sugar is supposed to be greater than the need of adults), live for weeks or months without a single lump of sugar, or bit of candy, or piece of cake, or sip of molasses or honey; and they never seemed to miss the sweets, or to suffer in the least from lack of them. Not seeing anything of the kind, they never thought of them. After a fast of this kind, (with plenty of wholesome food, and fruit, and milk), the effect of sugar, or candy, or cake, is plainly perceptible. The breath is immediately affected, and the appetite capricious. The child professses to be hungry, but says "No, I don't want bread; I want something sweet."

Some suppose that this proves a natural appetite for concentrated sweets, but by the same reasoning you can prove a "natural appetite" for alcoholic drinks. Since it is not convenient for us to dispense entirely with the use of sugar, it is very desirable that we should have it in the most wholesome condition, and all enlightened people should refuse to purchase the most doubtful kinds, and use only the hard white or coarse granulated sugars. Few of us can examine for ourselves into the purity of sugars that we purchase, though a good magnifying glass may enable us to detect the adulterations of common fine white sugar with corn-starch, flour, or terra alba, and other impurities.

Economy of Water in Washing.

Doubtless most of my readers have heard of the method of washing without boiling white clothes, by spreading the clothes fresh from the suds in which they were washed, to bleach for an hour or so in the hot sunshine, then rinsing them in two clear waters, or "sudsing" and rinsing them. This method saves both fuel and water in summer time, provided you have green grass on which to spread your clothes. Now I think of it, I dare say some of my talk about the difficulties of cleansing household gear, may have seemed strange, or exaggerated to some housekeepers in well regulated establishments. I do not wish to complain, but I will confess that in my various unprofitable movings about in eleven years, I have had grass about the house only twice, one summer each time. At other times the clay or sand, or fine black mold in the yard and around the doors, has served another purpose than to make washing and cleaning an easy task. Combined with this lack of grass for children to play on, and upon which their soiled garments might be bleached, and with the presence of unlimited quantities of black "dirt," has been the frequent difficulty of obtaining soft water in sufficient quantity for easy washing. So I suppose I may have spoken feelingly about the difficulties of washing-day.

But here comes another applicant for service, professing to save labor in the laundry—no less a person than Jack Frost. His service is certainly plenty and cheap in Minnesota. I am assured that one rinsing or simply "sudsing," is just as effectual as two rinsings after boiling, if you hang out your clothes and let them freeze dry. I am told that the clothes look as well, and smell as fresh and sweet as under the old plan, but I have not tried the method, it being now only November. If I get very tired of melting snow for the processes of washing, during the coming winter, perhaps I shall try the new plan advised by my neighbors, but not with entire faith that the result will be satisfactory. Still the advice comes from good housekeepers, who state that they have tried it themselves.

Hulled Corn.

This is a genuine country luxury. Though not very easy of preparation, a large quantity can be made at one time, to be eaten cold or warmed over in some way. If you wish only a six-quart panful of corn when hulled, take half that quantity of shelled corn. The same amount of ashes, or three quarts, is sufficient to make the lye, if hard wood-ashes are used. To the ashes add six quarts of water, heat and boil several minutes, skimming as impurities rise. A little cold water poured in, settles the lye when set off from the fire. Turn the lye off from the ashes, and strain it into a kettle with the corn. Boil it briskly half-an-hour, stirring it frequently. By this time the skins of the kernels should be loose and slip off easily. Strain off the lye, or skim out the corn, and rinse the kernels well with several waters. Then wash the corn covered with water in a large pan, rubbing it well with your hands until the black chits come off. Then rinse until the water looks clear. Put it back into the clean kettle, with clean water enough to cover

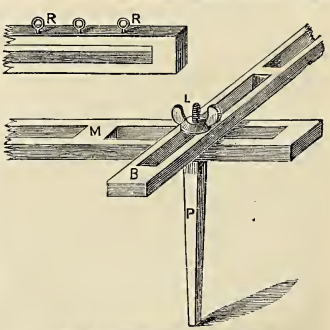


Fig. 3.—ONE CORNER OF FRAME.

it, and boil it slowly until quite soft, adding hot water when necessary, and stirring frequently. When quite soft salt it—a large table-spoonful for six quarts of soft corn. To be eaten with milk or cream, or sweetened cream, or sugar, or butter.

Some Household Conveniences.

BY L. D. SNOOK, YATES CO., N. Y.,

Wherever wood is burned, something to hold it is necessary, as a matter of neatness as well as to protect the floor and wall where the wood is placed. In former volumes we have given designs for rustic and other wood-boxes, suitable for a sitting-room, and here give one from our ingenious correspondent, Mr. Snook, which, though intended for the kitchen, with a little care in finishing, may be made to serve for other rooms. This box, which is shown in figure 1, should be of stuff not less than ¾-inch thick, and all the better if of inch boards. The large compartment, for holding wood, is 22 inches high, 14 in. wide, and 22 in. long, inside measurement. The side portion, *B*, with sloping lid, is 10 inches deep, the same wide, and of course as long as the other portion. Below this is the drawer, *R*, shown partly open. For the kitchen the box may be painted, to conform to the general woodwork, but for other rooms a pleasing finish may be given by papering the exterior with wall-paper. Very clever imitations of oak, walnut, and other woods, are now made in wall-paper, some of which would be appropriate for such a use as this. Of course the large division is for wood, and it should be recollected that the durability of the box will depend much upon the care taken by the person who keeps it supplied. If the wood is dumped by the armful into the box with a crash, it will last but a short time. There is a right and a wrong way in so simple an operation as dropping an armful of wood. The drawer may be used for kindlings, and the compartment above as a receptacle for dust-pan and brush, stove-blacking, etc.; or these may go below and the kindlings above.

An Improved Quilting Frame.

On rare occasions a quilting frame is in demand in a family, but when not in use it is very much in the way, especially if people are so short-sighted as to build a country house without a garret. The old style of quilting frame, in which the sides and ends are tied together, or insecurely held by pins, and the whole set upon the backs of four chairs, is still in use. It is a bungling affair, with nothing but cheapness to recommend it. The frame proposed by Mr. Snook, and represented in figures 2 and 3, is a great improvement over the common one, especially as it can "stand alone," it being provided with legs of its own. Figure 2 shows the frame as set up; the side pieces, *M*, *M*, are 20 ft. long, 2¼ in. wide, and 1 inch thick; several slots, an inch wide, and 20 in. long, are cut in these, as seen in the engraving. The end pieces, *B*, *B*, are about 8 feet long, the other dimensions being the same as for the sides. The legs, *P*, *P*, are 2 ft. 4 or 6 in. long, of square 2-inch stuff, and are worked down to one inch square at the bottom. In the top of each leg is firmly driven or screwed a half-inch iron bolt, which projects three inches, and upon the upper half of which is a thread, upon which a winged nut, *L*, easily turns. Figure 3 gives one corner of the frame, and shows the manner in which the parts are held together by the screw and winged nut; the slots in the side and end pieces allow the frame to be quickly adjusted to a small or large quilt. Strips of list, or thick woolen cloth, are tacked upon the inner edges of the frame, to which the edges of the quilt are attached by basting, or, if preferred, small screw-eyes may be inserted every five inches, to which the edge of the quilt may be fastened by a few stitches.

BOYS & GIRLS' COLUMNS.

Indoor Games of Marbles.

BY L. D. SNOOK, YATES CO., N. Y.

[Girls do not often play at out-door games of marbles, but here are some games at which girls as well as boys may play. These are given by our friend Mr. Snook, who invents so many useful things for older people, but does not forget the young folks.—Ed.]

A Marble-Board with Mallet Striker.—This board (fig. 1) is made of pine or other light wood, an inch and a half thick, thirty inches long, and about fifteen inches wide, with strips one-quarter inch thick, nailed around the edge, to project an inch and a half above the surface of the board. Near the center of the board is placed one end of the guard-strip, *B*, which is one-quarter of an inch thick, one inch wide, and six inches long, nailed or glued at the angle shown in the engraving. With a compass strike six circles, each six inches in diameter, marking them with a pencil, or paint, and number from 10 to 100, in the manner shown at figure 1. The game is to place the marble or small ball at *A*, and with a little mallet strike it a light blow, so that it will take a course similar to the dotted lines. Each player is allowed five shots, or the use of five marbles. A marble stopping within a circle, is counted the number of the circle, but if it rests upon the line, or outside of a circle, the stroke is lost, and no number counted. It will require considerable skill to strike the marble just hard enough to stop within the circle numbered 80 or 100, which all will play for. A game requiring more skill on the part of the players to gain the highest number, is shown in the

Portable Marble-Board with Swinging Striker.—In this, (fig. 2) the dimensions of the board are as in figure 1. Within five inches of one end there is placed an arch of wood or wire, one foot in hight, and should be so arranged as to be readily removed, or fold down upon the board when not in use. A leaden ball half-inch in diameter, is suspended by a string from the top of the arch; the lower part of the ball should just miss the board when swinging. Circles and a triangle are drawn upon the board and numbered as in figure 2. A common-sized marble is placed one inch toward the center from the ball. The game is played by taking the swinging ball in one hand, and holding it out over the end of the board, and, when the proper position is thought to be reached, to let it swing inward; it will be quite likely to strike the marble, and that will come at rest perhaps near the opposite end of the board. Five strokes are allowed each player; a stroke is the *first* swinging movement of the ball after leaving the hand, and two strokes in succession missing the marble, is called *one* stroke, and is to be so counted, also should the marble be moved just to or a little beyond the dotted lines, *E*, it is counted as a stroke. The point is to so strike the marble that it will stop within one of the circles or triangles, of course the player having the greatest number of counts wins the game. A game much simpler, yet requiring skill to win repeatedly, we call the

Set Marble Game, in which all the marbles are placed in position before a stroke is made. The board is of the same size as in the other games, only the strip is left off at one end. Three inches from the end, and at equal distances apart, are placed four marbles; two inches from this row, and equally distant from one another, is placed another row, containing five marbles; five inches from the open end is placed a row containing four marbles. After measuring off the distances here given, a small indentation is made at each point, which is easily done by striking a marble or bullet with a hammer at the point desired, and should be just deep enough to keep the marble from rolling about. With the mallet each player strikes in succession the four marbles near the open end of the board, which, when rolling, should displace as many as possible at the opposite end; after the four marbles have been knocked to the opposite end of the board, the vacant numbered places are counted up, if all are vacant, a count of 190 will be made, but there will usually be less, unless the players are skillful. After one has taken his four shots, the marbles are set for the next. These games may be played by two or several persons; each playing in turn, which may be decided by drawing lots, or by agreement among themselves.

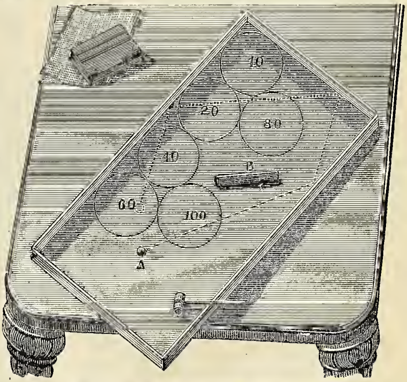


Fig. 1.—GAME OF MARBLES WITH MALLET.

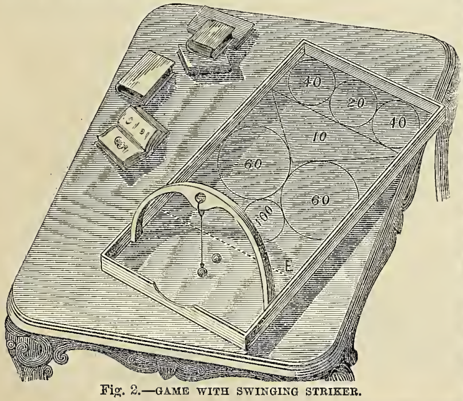


Fig. 2.—GAME WITH SWINGING STRIKER.

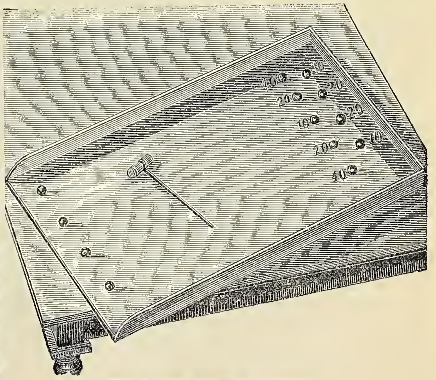


Fig. 3.—SET GAME OF MARBLES.

The Doctor's Correspondence.

As usual, I have a budget of letters asking questions, and as usual, I fear that I shall disappoint some of my young friends, who will eagerly look for answers, and not find them. A bright boy or girl will in a few minutes ask more questions than the wisest man can answer in a long while. Indeed, a great many of the questions that come to me are unanswerable. Every year people are finding out more and more about the world we live in, but the most learned is soon brought to a point where he must say "I do not know."....Master F. J. P., Ionia Co., Mich., profits by what he reads, for having an insect to send, he made a very clever case by boring a block of wood as I directed some time ago. But my young friend should not use tacks to fasten in the plug. I wonder that the post-office people did not see them and charge me letter postage. Such things when sent by mail must be tied only, and in such a manner that they can be opened readily. The case contained

THE POTATO OR TOMATO WORM

in the pupa state; this was found in a manure heap, but they are generally in the ground. Most of you, I think, know the fat green "worm" or caterpillar, that makes such work with the tomato and potato vines; it is as large as a small boy's finger, and has a horn at its tail, which some people think is a sting; it neither stings nor bites, and is harmless to everything but the plants—but how it does eat them! When this caterpillar has made its growth, it goes into the ground, throws off its skin, and appears something like a curious little brown jug with a handle. Next season the fellow wakes up, bursts its brown shell, and comes out a large quick-flying moth, which you sometimes see at dusk about the flowers, where it hovers, and runs its long tongue into them in search of honey. The part which makes the handle to the jug-like pupa, is the case that holds the long tongue. The scientific name of the insect is *Sphinx quinquemaculata*, the Five-spotted Sphinx......Another boy, in Iowa, wishes some simple way to make

BLACK OR VIOLET INK.

Violet ink I know nothing about making, and less about using. I think it should never be used; indeed, people as a matter of safety should let these fancy inks alone. Good black ink we know will last for centuries, and if it fades can be restored again. Unless you use a great deal of ink, it will be cheaper to buy it, than to be at the trouble of making it, but as it is well enough to know how, I will tell you one of the ways. The best ink is made of galls and copperas, (Sulphate of Iron), water, and a little gum is used to keep the ink from spreading; these are all that any ink need contain. There are different ways of putting these together; as you ask for the simplest, I give it. Into an ordinary quart bottle put a pint of rain-water and two ounces of broken galls, not powdered, but broken up as fine as wheat grains; you can break them by putting them into a piece of strong cloth, and pounding them with a mallet. Let the galls and water stand in a warm place for a week or more, shaking every day, or as often as convenient. Then add half-an-ounce of gum arabic, and three-fourths of an ounce of copperas, and shake occasionally for three or four days or more. The ink will then be ready for use, and may be poured off from the dregs, or left on them, as you choose, but if left, you must take care in pouring off the ink when wanted, not to stir up the dregs. This ink will be pale when first written with, but will grow jet black in time. Should it not flow readily from the pen, add a little sugar, not more than a quarter of an ounce to the pint. A few bruised cloves will help to prevent mold, but nothing except keeping it stopped, will prevent this, or any other ink, from drying up and becoming thick in the inkstand.

PUMPKIN-SEED MATS.

A question comes to me, which should go to Aunt Sue, but as there is not time to send it to her and get a reply, and as the seeds are likely to be more plenty this month, than later, I take the liberty of answering it myself, though out of my line. THE DOCTOR]. Yes, Alice B., I have "heard of pumpkin-seed mats," and what is more, of "melon-seed bags." When I was a youngster the girls and young women carried a *reticule*, and the old women carried a *bag;* they were both the same thing, but it was thought more genteel to say reticule. These bags were of various sizes, shapes, and materials, and answered the place of pockets. No doubt your fathers and mothers can recollect what a wonderful thing their grandmother's bag was, and the many nice things that came out of it. The bags of the older persons were strong and large; those of the young girls were small, and of some fancy material, often of beads of various colors, worked into pretty figures. At one time melon-seed bags were in fashion; these were made of the seeds of the musk-melon, and black, cut-glass heads of various sizes; these were strung on strong silk, to make an open-work net, and this was lined with silk. These bags were very pretty, and no one would guess at the material without first examining it closely. But about the pumpkin-seed mat. The seeds—those of squash will answer quite as well—are to be dried, then all the poor and small ones picked out, so as to have them alike in size; if the thin film or skin of the seeds has not fallen off in drying, it should be rubbed off, to leave a clear white surface. You will need some very strong linen thread and a needle. Begin by stringing 18 seeds, passing the needle and thread through their small ends, and tie the thread securely; this will give you a rosette of seeds, standing on their edges. Now between each two of these seeds put two other seeds, the thread passing through the large ends of the seeds of the first row, and through the small ends of those in the second row. The diagram will show how this is done. For the third row, put three seeds in the spaces between the pairs of the second row, and so continue, using four seeds for the next, and so on, until the mat is large enough. If intended for a toilet table, the mat may be finished with a fringe at the edge, and a bow in the center, of any desired color. If to be used for a tea-pot, then it is better if left plain, except a bow in the middle. If strong thread is used, and the knots at each row carefully made, the mat will be much more serviceable than one would suppose.

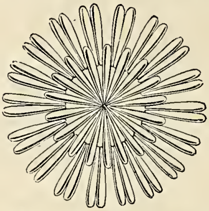


Fig. 1.—PUMPKIN-SEED MAT.

Aunt Sue's Puzzle-Box.

GEOGRAPHICAL ENIGMA.

I am composed of 26 letters:
My 1, 11, 19, 5, is a city in Italy.
My 3, 19, 9, 12, 2, 23, 24, is a city in Persia.
My 18, 26, 19, 10, 22, 3, 8, 21, 7, is a city in Tennessee.
My 4, 20, 18, 24, is a city in Massachusetts.
My 22, 25, 16, 17, 14, 26, is a city in Austria.
My 24, 23, 15, 8, 7, 19, is a city in Italy.
My 6, 12, 17, 22, 13, 21, 8, 16, is a city in Kentucky.
My whole is a city, and where situated. E. W.

METAGRAM.

Entire, I'm often seen on people's faces,
Adding no charm to any of their graces;
Beheaded, by a certain class I'm worn,
More to protect or hide than to adorn.
Behead again and you will see a bird
(Its song is not the sweetest ever heard!)
Restore my heads; curtail (one letter shorter),
You then will see what floats upon the water.
Behead me now and quickly you will find
An animal, most useful to mankind.
Curtail me once again, and you will see
Something that might be "short for" you and me.
D. M. W.

PUZZLE.

Take one quarter of a pear, half of a quince, half of a pear, half of a plum, and another quarter of a pear, and make a delicious fruit. SALLIE.

CROSS WORD.

My first is in take but not in bring,
My next is in knight but not in king,
My third is in eat but not in drink,
My fourth is in judge but not in think,
My fifth is in snow but not in hail,
My sixth is in picket but not in rail,
My seventh is in hut but not in shed,
My eighth is in cot but not in bed,
My ninth is in dark but not in light,
My tenth is in strength but not in might,
My eleventh is in cent but not in dime,
My twelfth is in mortar but not in lime,
My thirteenth is in ale but not in tea,
My fourteenth is in lake but not in sea,
My whole, in these pages, you oftentimes find,
'Tis improving and pleasant and just to my mind.
SYDNORA.

BLANK DECAPITATIONS.

(Fill the first blank in each sentence with the word which is to be beheaded for the second blank.)

1. I —— him and asked what —— him.
2. In the night I heard the dog —— and the —— hoot.
3. The latter took —— as soon as it was ——.
4. Please —— —— carefully.
5. I scarcely dared to —— the —— paper.
6. Its —— was —— feet.

DIAMOND PUZZLE.

1. A consonant. 2. Large. 3. The end. 4. A division of animals. 5. To tax. 6. To beg. 7. A consonant.
ORION.

SQUARE WORD.

1. A tree. 2. A gas. 3. Northern. 4. A vowel, and light blows. 5. A Russian river. ORION.

ANSWERS TO PUZZLES IN THE NOVEMBER NUMBER.

NUMERICAL ENIGMA.—Saint Peter's.

CROSS WORD.—Mabel.

PI.—A millstone and the human heart
Are driven ever round,
If they have nothing else to grind,
They must themselves be ground.

SYNCOPATIONS.—1. Feather, father. 2. Cart, cat. 3. Coral, coal. 4. Heart, hart. 5. Trowel, towel.

DIAMOND PUZZLE.

G
R A G
R U L E R
G A L I L E O
G E L I D
R E D
O

SQUARE REMAINDERS.

B—EAR
F—ARE
F—RED

HIDDEN TRANSPOSED FRUITS.
1. Pear. 2. Grape. 3. Quince. 4. Berry. 5. Peach.

CHARADE.—Partridge.

PUZZLE.—DID. (D stands for 500, consequently two Ds equal one thousand. Divide the two Ds by one, or I, and you have DID.)

A CITY.—New York.

CONCEALED SQUARE WORD.

C O N C H
O M A H A
N A I A D
C H A S E
H A D E S

TRANSPOSITIONS.

1. Part, trap.
2. Scar, cars.
3. Tame, meat.
4. Arm, mar.
5. Rap, par.

Thanks for puzzles, letters, etc., to P. T. V., George, J. C. C., John Smith, Bella, Sid, Kitty, C. F. Y., Patsie, C. J. D., Geo. W. W., and Erastus.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.,* and *not* to 245 Broadway.

Aunt Sue's Chats.

ADELE.—A butterfly is a rather pretty "shape for a pen-wiper." Cut two pieces of black cloth the shape of figure 1, but about twice as large. Button-hole one piece around the edge with yellow silk or worsted. (This keeps it in good shape.) Work yellow dots all round the edge, and the six dots in the center of the lower wings blue. Cut half a dozen pieces of black silk (or muslin) a little smaller than the pattern, to put between the pieces of cloth. Chain-stitch the lines between the upper and lower wings with red. Roll up a small piece of black velvet (black cloth will do), and fasten it on to the worked piece by red worsted, sewed over and over. Before sewing the body into place, put all the pieces together where they belong, and fasten them all in place by sewing on the body. Sew two black beads on the head, for eyes, and draw a piece of waxed black silk through the head for the long feelers or antennæ.

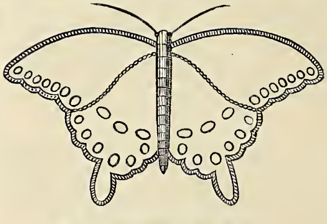


Fig. 1.—BUTTERFLY PEN-WIPER.

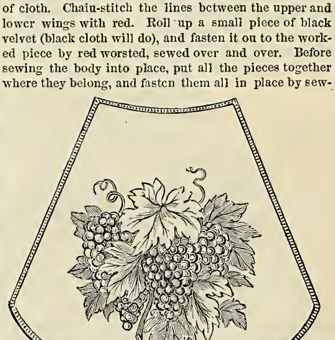


Fig. 2.—PART OF SHADE.

ALICE G. S.—Your letter reached me too late to give you any hints for your Christmas-tree. By "many scraps of wool," do you mean pieces of colored worsted? A good way to use up the latter is to knit reins for little boys to "play horsie"; these are always acceptable, and a few toy sleigh-bells sewed on where the different colors join, make them very attractive. I hardly know what to suggest for "the pictures of fruit-cans," unless they would do for lamp-shades, one in each section, like figure 2. Or for shaving-cases, figure 3. Cut two pieces of card-board any shape you choose; paste a strip of gilt (or other ornamental) paper around the edge, stick your picture on the center, cut a number of thin papers a little smaller than the case, and fasten all together with a fine string. Ornament with a bow of ribbon, and hang it up by "Papa's" shaving-stand.

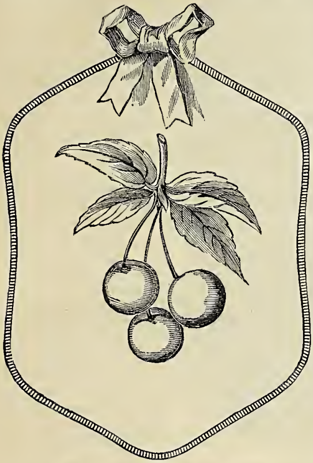


Fig. 3.—A SHAVING-PAPER CASE.

Annie Burns.—Directions for making a toilet-set, including most of the articles you mention, have been already given in the *American Agriculturist*. If you will turn to the number for June last, you will find them.

W. Parsons.—Much obliged, but we want only original contributions.

Harry B. Cramer sends two puzzles for the *American Agriculturist*, one of them is—"Be above making mischief in a family between man and wife," and the other is—"J. Underhill, Andover, Mass." The lad says he is twelve years old, and made these puzzles himself. Now, as I happen to know that these puzzles are over twenty years old, Mr. H. B. C. must be older than he thinks he is, if he *made them himself*.

Gussie.—I presume the "word which rhymes each time you behead it," is "Laboratory"; *e. g.*, laboratory, aboratory, boratory, oratory; ratory, atory; tory, ory; ry, y. If any of you know of any other word which will do the same, we should be glad to hear from them.

How Things are Done in Other Countries.—Flour from the Grain.

Last month we described the old and slow ways of thrashing, by trampling out the grain by means of horses and other animals, and compared this with our quick way of doing the same work by machinery. We also told you that in some countries the people do not improve at all in their ways of doing work, but carry on their farming exactly as it is described in the Old Testament, in the earliest times of which we have any record. Thrashing is the first step towards making the grain into bread, and after describing this we had not room, last month, to say anything about the next step—grinding the grain—which we propose to do now. As you may suppose, grain that has been trampled out on an earthen thrashing floor will be very far from clean; it is mixed not only with the chaff, but also much fine earth from the thrashing place, and these must be separated before the grain is ground. In our thrashing machines a blast of wind blows away all such stuff, and the grain comes out very clean. Then almost every farmer has a "fanning-mill," with which, if the grain is not clean enough, as it comes from the thrashing machine, he can finish it. It is also used for grain, beans, etc., that are thrashed with a flail. In the fanning-mill, the grain falls upon sieves of different sizes, where it is shaken, while all the while a large fan-wheel blows a strong and steady stream of air over it, and the grain comes out bright and clean; the chaff and dust are blown away, the sieves remove all the small and poor wheat grains, and also the seeds of weeds that are often mixed with it. The work is done very neatly and quickly, and the wheat and other grain leaves the mill all ready to be ground.

But the ancient farmers had no fanning-mills, indeed they were not known anywhere until about 100 years ago, and it was very slow work for them to clean their grain, as it is to those people who have learned no new ways since the flood. Last month we told you that the Mexicans where quite as much behind the rest of the world in all such matters, as are the people of Eastern countries; we do not mean all Mexicans, but those who live away in the parts where there are but few people, and the few who do live there are much more like Indians than like Europeans, and if you were to live among them, as we have, you would get a glimpse of the ways in which the farmers managed before the Christian era. When the Mexican has trodden out his—or her—wheat, (for the women quite as often do it as the men), by the use of horses, oxen, or even goats, then it is gathered in a heap, and a windy day is waited for. When there is a good breeze blowing, the wheat is thrown, by means of a rude wooden scoop-shovel, against the wind; the heavy grains soon fall, while the light chaff and dust, are blown to a distance. It looks very droll to see them throw up the wheat as if for the fun of the thing, but they manage it very cleverly, so that the clean wheat will fall in a pile, and not be scattered, as you would suppose, far and wide. This operation is called winnowing, and it was by this that grain was cleaned in very old times. The grain being cleaned, the next operation before we can get a loaf of bread, is to grind it, to make flour, coarse or fine. In the grinding, a mill is used, but before we notice the ancient mill of the old world, let us look at a very ancient one of the new world. In most of their farming the Mexicans use the implements now common in Eastern countries, and which are just like those of very early times, but in their mills, or grinding affairs, they borrow from another class of ancients. In various parts of Mexico, there are ruins of very old buildings and towns; these are generally mere heaps of rubbish, but some have the walls still standing; when these were built, or who built them, is not known; the Indians of the present day know as little about them as we do. In these ruins, among pieces of broken pots of various kinds, are found the grinding stones formerly used by the people who built these now ruined houses. The stones are shaped like that shown in fig. 1; a slanting bench of very hard stone, with a sort of pestle or grinder. A stone of this kind is called a *metate*, (pronounced in three syllables), and is a very important article in Mexican housekeeping. Those found in the ruins, though much worn, show much better work than those made at present. The way in which the metate is used is this: the woman kneels at the higher end, and putting a handful of grain on the stone, takes the rubbing stone by both hands, and bearing hard upon it, crushes and grinds the grain into a coarse flour. It is slow work, and as the Mexicans are not a provident people, but live "from hand to mouth," there is seldom any flour on hand, but if breakfast, or other meal is to be prepared, the woman starts with the grain, and has to make the flour before any bread or cakes can be baked. So far as we know, the use of the metate is not known in the old world, but it is very old in the new. The earliest mill of which we have any account, consists of the two circular stones; the lower one is fixed, while the upper one is movable, and has a hole in the middle through which the grain is dropped, and an upright stick placed in it near the edge, serves as the handle by which it is turned around. The engraving, fig. 2, shows this mill, and the manner of using it. The "two women grinding at a mill," mentioned in the Scriptures, may still be seen in the Eastern countries, as they were in old, old times; indeed among the country people in some parts of Ireland, almost precisely such a mill may be seen in use. Grinding grain by such a mill is very slow work. In Mexico we have seen just such a mill, only several times larger, and instead of an upright stick by which the upper stone could be turned by hand, has a projecting one, to which a donkey was hitched. A donkey, especially a Mexican one, is not at best a fast animal, and when hitched to such a mill, he appears to try how slow he can be, and yet move.

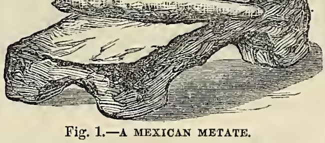


Fig. 1.—A MEXICAN METATE.

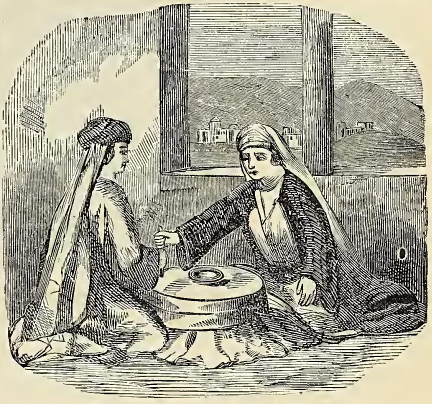


Fig. 2.—ANCIENT AND EASTERN MILL.

We do not know that our patience was ever so much tried, as in getting a few bushels of wheat ground with this most primitive mill. These grinding affairs, the metate, and the simple mills, leave the bran mixed with the flour. This is in part separated, in Mexico at least, by shaking the whole, as it comes from the mill, in a sort of sieve, made by fastening a piece of skin to a hoop; this does not sift, but shaking brings the bran to the top, and it is blown off by the breath; sometimes, but rarely, regular sieves are used. If you would see how much better and quicker we do all these things, you should ask permission to visit the nearest flouring mill, where water or steam-power take the place of the woman at the metate or mill, and where the stones fly round with a buzz, and the ground wheat, when it comes from between the stones, passes into a big revolving sieve that separates the fine flour, the middlings, and the bran. Indeed, so ingenious are our mechanics in helping our farmers, that we have mills which are as complete in themselves, as the large flouring mills in the great wheat-growing states, and with which, set in motion by his horses, the farmer can turn out the finest flour. If you will look back at last month's *American Agriculturist*, you will see on page 456, figure 1, a mill of this kind, intended for farm use. We do not believe in boasting, but we do believe in appreciating the good things we have, and in feeling grateful for them. A large share of our boys and girls live upon farms, and it is only right that they should know how much better a farm-life is in this country, than it is in some others. Let them compare the rude metate, and the almost as rude hand-mill here described, with the very complete and compact mill in last month's paper, and when they know that in everything that relates to farm life, and home comforts, the farmer in this country is as much better off, than those in the historic lands of the East, or in our neighboring country Mexico, they should be thankful that their lot has placed them where life is easier, and that one of the most necessary articles—bread, is not earned by quite so much "sweat of the brow,"

The Doctor's Talks — A Look at Lapland and the Lapps.

Some of you will wonder why the Doctor begins the New Year of his "Talks," with a subject so unlike those he usually chooses. One reason is—I like—and so do all of you I think—variety, and as in answering several of my correspondents I have had to talk about "bugs and beasts," I thought you would like to know about the Lapps, about which we hear so little—even less than we do about the Icelanders. Then again, I usually talk on some subject that I know something about, and it will be a change to take one about which I know almost nothing, besides in this case I shall learn something, as well as yourselves.—"Yes, and take it all out of a book," some bright youngster will say.—Not so fast my boy, I shall give you new and original matter, though it will not be mine, and this brings me to the principal reason why my "Talk" is this time about Lapland. A very good friend of yours—that is he is a good friend of the *American Agriculturist*, and of course must be of its family of youngsters, Mr. Krohn, who lives in Norway, has been off among the Lapps, and he sends us a number of excellent photographs, and a very full account of the country and the people. I have had engravings made from two of the photographs, and his account, which was not intended to be printed and is very long, I shall use to make a "Talk," for you.—Well now, in the first place, look for Lapland on your maps. You, of course, find it in Europe, but not, at least it is not in any of my maps, put down as a regular division, but Lap-land or the land of the Lapps, extends across the northernmost parts of Norway, Sweden, and Russia, and borders on the Arctic sea. It is said that the Lapps once had what is now Norway and Sweden, but that they have been gradually pushed north by more powerful nations, until they now have only a narrow territory, with the Arctic Ocean on one side and high mountains with perpetual snow on the other. There are only about 30,000 of them altogether, and these are scattered in tribes, which have but little to do with each other, and according to Mr. K., they speak such different languages that those from one part of the country can not understand those from another part, though they all call themselves one nation. Though professedly Christians, they are very superstitious, and believe in witches and spirits, good and evil. As a rule they are very small, the men being rarely over five and often under four feet high, and the women much smaller; they have dark skins, very black and straight hair, very little beard, which they pull out when young, and dark, deeply set eyes. They dress in woolen cloth in summer, and in furs in winter, and are fond of gay colors. They use when traveling on the snow a kind of skates, called "skiders," which are made of light wood, one of them as long as the person who wears it, and the other a foot shorter; the feet are fastened to the middle of these by thongs, and with them he can skim over the snow so fast that he can overtake the swiftest animal. Perhaps if asked what you know about the Laplanders, almost every one of you would answer—"Reindeer"—and you would be right, for this is the most peculiar thing about them, and they are the only people in the world who regularly use any kind of a deer as a domestic animal. I don't intend to give you a full history of the Lapps, or to tell you all that Mr. K. writes about them, but only about the points shown in the pictures, the people, their houses, and their reindeer. As to the people, the upper picture shows their dress, and with what I have already said about them, you will have a good idea of how they look. The men show much skill in carving articles from reindeer's horns, and the women in weaving ribbons and other finery of bright colors to wear. Some of the Lapps are wandering tribes, living always in tents and moving from place to place; others build huts of stones and moss (as in figure 1), which they live in in winter, and take to their tents only in summer, when they go from the mountains down to the sea, while others still, called the Fisher Lapps, live near the water all the year in the most miserable huts, surrounded by heaps of decaying fish; these are regarded as the lowest of all and they are so dirty as to be very unpleasant people. The tents are made like those of some of our Western Indians; a lot of poles placed together to form a cone, and this is covered in summer with coarse cloth, and in winter with skins; a hearth or fire-place of stones is made in the middle of the tent, and the smoke goes out at a hole in the top. The floor is covered with skins, and in this place, not more than six feet across, the whole family sleep at night, and huddle around the fire by day. All their furniture consists of a chest for the best clothes, a few bowls, pots, and kettles. Living in this way, it is no wonder that they are not clean, that the smoke causes most of them to have sore eyes, and that there are a great many blind people among them. Even the wealthiest live in a manner that the poorest among us would think most miserable. Their wealth consists almost entirely of reindeer. Though the most useful, the reindeer is probably the least graceful of all the deer family; you can see by those in the lower picture, which are photographic portraits, that it is far from being as handsome as our American deer. It is remarkable for the great size of its spreading hoofs, which allow it to travel over the snow. The horns are very large, and broad at the top, and weigh from 20 to 25 lbs. Unlike other deer, the females, as well as the males, have horns. It feeds in winter entirely upon what is called reindeer moss, which is a whitish kind of *lichen*, not rare in our Northern States, and very abundant in Lapland. The deer gives its owner no trouble about feeding or stabling; it digs its own food from under the snow, and all the housing it gets is a pen at night to keep off wolves; in summer it feeds upon the leaves of trees and upon green herbs. Sometimes the deer are wild, but they can be made very tame and become fond of their master. The females furnish a very rich milk, though but little of it, and is used as food and to make butter and cheese. The deer is used for riding and to draw the sledge, and as a pack animal; but it is not much used for riding, as it is very weak in the back-bone, and the saddle is placed on the haunches. The Lapps, who wander from place to place, rarely stay in one spot more than a fortnight; by that time the pasture is used up, and in half an hour the tent is taken down, and that, with all the household goods, is packed on the backs of the deer, and the family start to find a new home. The picture shows one of the deer with its pack, ready to start. But it is in the sledge or "pulka," as they call it, that the deer travels best; this is like a boat with a round bottom, and it carries but one, and he is packed in with furs very snugly. The deer has a collar around its neck, from which the traces run down between its legs, and are made fast to the sledge; reins are attached to the horns, and small bells are fastened to the collar, as the deer is fond of their sound. The deer will draw the sledge 60 or 70 miles a day. Perhaps you think it would be a grand thing to go off in this style, but it is really hard work, and not without danger. The driver has all he can attend to; he has to balance the sledge with his body—for woe to him if he should upset! He carries a stick to steer by, and to prevent an overturn; there are no roads, and trees are many; if the sledge should strike a stump or a stone while at full speed, the rider would suffer. After all I think that I prefer our sleigh with a horse. Some rich Lapps have as many as 1,000 to 1,500 reindeer, and 300 are considered enough to support a large family; the rich owner can kill his deer, and buy with the sale of the skins all that he wants. The meat of the deer is the chief food of the Lapps, and they put every part of the body to some use: the tongue and marrow are choice parts; the blood is made into a pudding; the skin is made into clothing and serves for tents and bedding; the horns and bones are worked into spoons, knife-handles, and other small articles, and even the hoofs are used to make jelly and glue. Though so useful, the reindeer sometimes gets furious; then the owner must look out, and if he is on a journey he hides under the overturned sledge until the animal gets over its "tantrums." There are some unpleasant things about the Lapps, but they have two good qualities — hospitality and a great love of peace. Mr. Krohn states that the stranger is welcomed to the poorest Laplander's hut; the common salutation being "Is peace in the land?" and is given the warmest place and the softest skins; he adds: "peace is his motto, his first question is for peace, and his good bye is, 'may peace be with you.'" "Who would be a Laplander?" you will say. Yet they like their life, and wish for no other; if taken from home, they pine and are miserable until they can get back.

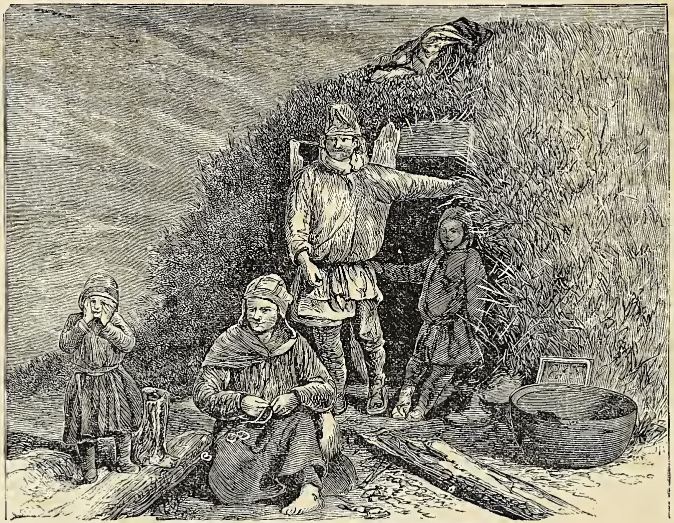


Fig. 1.—A FAMILY OF LAPPS AND THEIR HUT.

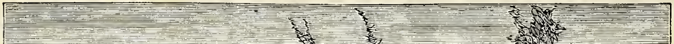
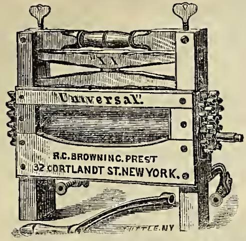


Fig. 2.—REINDEER, ONE PACKED FOR A JOURNEY.

UNIVERSAL



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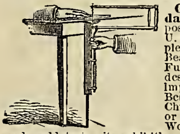

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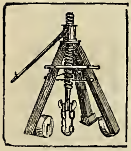

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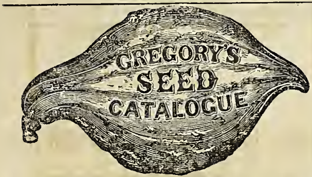

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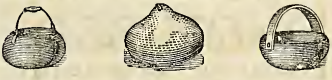

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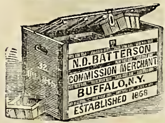

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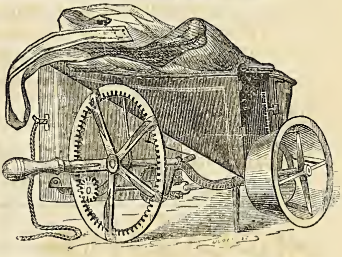

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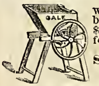

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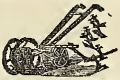

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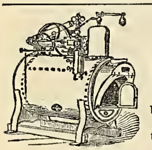

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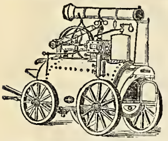

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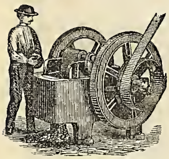


New Patterns, with Important Improvements and Abundant Strength.

For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect McADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS. It is extensively in use in MINING operations, for crushing

IRON, COPPER, ZINC, SILVER, GOLD, and other ORES.

Also for crushing **Quartz, Flint, Emery, Corundum, Feldspar Coal, Barytes, Manganese, Phosphate Rock, Plaster, Soapstone, etc.**

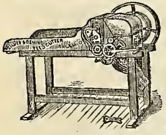
BLAKE CRUSHER CO., NEW HAVEN, CONN.

The United States Centennial Commission

AWARDED THE

"Silver & Deming Feed Cutter,"

a Bronze Medal and accompanied it with a special report.



REPORT.

For a Safety Fly Wheel arrangement. The wheel being fixed to the shaft by a friction cone.

In the event of iron or other hard substance getting into the feed, the Fly Wheel revolves but knife stops.

Also for a single plan of changing the cut by shifting cluster of gear wheels.

A. T. GOSHORN, Director General.
J. R. HAWLEY, President.
(Attest.) J. L. CAMPBELL, Secretary.

Manufactured only by

SILVER & DEMING MANUFACTURING CO.,

Send for Circular. **SALEM, OHIO.**

Granger's Almanac, 1877, 72 pages, history of the Grange, what it has done. Farmers ought to have it. 10 cts. a copy. S. HOWARD WILSON, Mechanicsville, Bucks Co., Pa.

Crude Petroleum, shipped by U. S. or American Express, Buffalo or Erie R. R. Send Postal for prices, also for fine poultry and American Watches. H. W. RUGG, Olean, N. Y.

CHAPMAN & VAN WYCK,

(Established 1849),

DEALERS IN

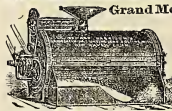
PERUVIAN GUANO

EXCLUSIVELY,

170 Front Street, New York.

HARRISON'S MILLS

Grand Medal at Centennial.



Standard Flouring Mill.	Standard Grinding Mill.
Cleaner Grinder and Bolter.	For all substances wet or dry.
Ordinary size, 9 feet by 4 feet	Built of burr stone and iron.
Capacity 5 bushels per hour.	For heavy or light power.
Finest flour, largest yields.	10,000 in operation.
Cooled by a strong air blast.	Grind 75 bushels per hour.
Runs at one-tenth the cost	Thickest French burr stones.
Of the old style mills.	Double discharge spouts.
Compact, practical,	Adjustable babbitt boxes.
Substantial, and very durable.	Solid self-adjusting burrs.

These Mills excel all others, even compared with those of double the size, double the weight, and double the price.

EDWARD HARRISON, Patentee and Sole Manufacturer,
135 Howard Avenue, NEW HAVEN, CONN.

United States Life

INSURANCE COMPANY.

WHAT THE NEW YORK INSURANCE DEPARTMENT REPORTS

AFTER A THOROUGH EXAMINATION

OF THE

United States Life Insurance Co.

I. ASSETS.

Real Estate			$61,002 94
Bonds and Mortgages, first liens			2,660,707 19

STOCKS AND BONDS OWNED.

	Par Value.	Market Value.	
U. S. Registered Bonds	$137,350	$158,208 69	
N. Y. City Registered Bonds	508,000	540,675 00	
Brooklyn Registered Bonds	213,000	226,780 00	
Kings County Coupon Bonds	55,000	59,850 00	
Buffalo City Coupon Bonds	140,000	149,045 83	
Erie County Coupon Bonds	25,000	25,583 33	
Eastchester, N. Y., Coupon Bonds	16 000	16,280 00	
Richmond Co., N. Y., Bonds	2,500	2,562 50	
Chicago City Bonds	50,000	50,500 00	
South Norwalk, Ct., Water Loan	100,000	104,000 00	
Jersey City Registered Bonds	74,000	77,140 00	
Dist. of Columbia 3-65 Bonds	150,000	105,000 00	
Totals	$1,470,850	1,515,625 35	1,515,625 35

COLLATERAL LOANS.

	Par Value.	Market Value.	Amount Loaned.	
Bonds and Mortgages	$50,000	$50,000	$30,000	
U. S. Bonds	10.000	11,600	10,000	
Dime Savings Bank Stock	3,000	3,000	1,500	
U. S. Bonds	1,000	1,130	900	
Rochester City Bonds	50,000	50,000	10,000	
Totals	114,000	115,730	52,400	52,400 00

Cash in Office	$473 02	
Cash in Bank, Per Certificates	103,989 24	
Total Cash Items		104,462 26
Premium Notes and Loans on Policies in Force		172,744 72
Net Uncollected and Deferred Premiums		115,490 00
Accrued Interest on Bonds and Mortgages		70,735 98
Accrued Interest on Premium Notes and Loans		6,234 58
Total admitted Assets		$4,759,403 02

Items not admitted as Available Assets.

Agents' Balances	$18,839 09
Bills Receivable	8,695 18
Total	27,534 27
Aggregate Total Assets	$4,786,937 29

II. LIABILITIES.

Net present value of all the outstanding policies in force on the 31st day of October, 1876, computed by the Insurance Department, according to the American Experience Table of Mortality, with 4½ per cent interest	$3,846,827 00
Unpaid losses, including all reported and supposed claims	122,930 00
Premiums paid in advance	6,829 22
Accrued Rent	2,500 00
Liability for reserve on lapsed policies, where said policies can be restored on application	11,009 00
Total Liabilities	$3,990,095 22

III. MISCELLANEOUS.

Surplus as regards policy holders on the basis of admitted assets	$769,307 80
Surplus as regards policy holders on the basis of total assets	796,842 07
Capital Stock	250,000 00
Capital Scrip	125,000 00

JOHN A. McCALL, JR.,
S. M. BALLARD,
Commissioners.

INSURANCE DEPARTMENT.

ALBANY, December 4th, 1876.

I, WILLIAM SMYTH, Acting Superintendent of the Insurance Department of the State of New York, do hereby certify that I have compared the annexed copy of Appointment and Report of Commissioners on examination of United States Life Insurance Company of New York with the original on file at this Department, and that the same is a correct transcript therefrom, and of the whole of said original. (Schedules excepted.)

In witness whereof, I have hereunto set my hand and affixed my official seal, at the City of Albany, this 4th day of December, 1876.

WM. SMYTH,
[L. S.] Acting Superintendent.

AMERICAN AGRICULTURIST.

ORANGE JUDD COMPANY, Publishers, 245 Broadway, N. Y.

ANNUAL SUBSCRIPTION **Terms** (always in advance): $1.60 each for less than four copies: Four to nine copies, $1.35 each: Ten to nineteen copies, $1.30 each: Twenty copies and upward, $1.10 each. These rates *include Postage*, in each case, which is pre-paid *by the Publishers.* Papers are addressed to each name.

☞ Either English or German Edition, at these prices.

GREAT
REWARDS
FOR A
Little Work.
EVERYBODY WANTS
ONE OR MORE
OF THE MANY
GOOD THINGS
In our Premium List.

The Publishers of the *American Agriculturist* take pleasure in presenting their new general Premium List for 1877. The Premiums which they have offered in past years have engaged the attention of a very large number of persons of all ages and both sexes. Many thousands have secured Premiums, and very many of these, who at first had small hopes of success, have been themselves astonished at the ease with which they have raised large clubs and secured one or more of the valuable articles here offered.

[*Read the Table of Premiums in next column and the notes below it.*]

Explanatory Notes.
N. B.

Read and carefully Note the following Items: The next Table tells the *name* and *cash price* of each article, and, (in the last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.) (*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. You can have any time you wish up to next July, to complete your list....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion, at least, should be new names; it is partly to get these that we offer premiums to canvassers....(*f*) Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they should be used carefully and economically, and where they will *tell*....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk; otherwise it is not.

Table of Premiums.

[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.60 a year, and also at the club rates of $1.10 a year, postage included, which is prepaid in all cases *by the Publishers.*]

TABLE of Premiums and Terms
For Volume 36—(1877).
Open to all—No Competition.

No. Names of Premium Articles.		Price of Premiums.	Number of Subscribers required at $1.60	or at 1.10
1—*Pat. Magic Bellhead Pencil (Ludden & Taylor)*........		$ 1 50	4	....
2—*Ladies' Magic Charm Pencil (do. do.)*.		$ 2 00	5	20
3—*Gents' Magic Charm Pencil (do. do.)*.		$ 3 00	8	30
4—*Gold Pen, Telescopic Case (do. do.)*.		$ 2 50	7	27
5—*Gold Pen and Pencil, Telescopic Case, Elegant (do. do.)*........		$ 5 50	13	37
6—*Centennial Magic Pencil (do. do.)*......		$ 3 00	8	30
7—*Patent Telescopic Gold Pen and Pencil (do. do.)*........		$ 6 50	15	45
8—*Knives and Forks (Patterson Bros.)*..		$14 75	22	73
9—*Knives and Forks (do. do.)*...		$18 50	28	95
10—*Carver and Fork (do. do.)*...		$ 3 75	9	32
11—*French Cook's Knife, Fork, and Steel*		$ 3 75	9	32
12—*Pocket Knife (Meriden Cutlery Co.)*..		$ 1 50	4	....
13—*Pocket Knife (do. do.)*..		$ 2 00	6	22
14—*Pocket Knife (do. do.)*..		$ 2 75	7	27
15—*Ladies' Pocket Knife (do. do.)*..		$ 2 00	6	22
16—*Multum in Parvo Knife (do. do.)*..		$ 3 50	8	30
17—*Boy's Wagon (C. W. F. Dare)*........		$ 5 00	12	37
18—*Patent 4-wheeled Propeller Velocipede, (C. W. F. Dare.)*........		$ 8 00	16	52
19—*Crandall's* **John Gilpin**........		$ 1 00	3	....
20—*Crandall's Masquerade Blocks*........		$ 1 00	3	....
21—*Crandall's* **Acrobats**........		$ 1 00	3	....
22—*Crandall's Building Blocks*........		$ 2 00	5	20
23—*Crandall's* **Menagerie**........		$ 2 00	5	20
24—*Case of Scissors (U.S. Steel Shear Co.)*.		$ 4 00	10	34
25—*Terrestrial Globe [Schedler's] (Steiger)*		$ 3 00	8	30
26—*Combination Ten-pin Alley (Horsman)*		$ 2 50	7	27
27—*Pair of Skates (Patterson Bros.)*......		$ 3 50	8	30
28—*Doll's Cottage Chamber Set (Dare)*...		$ 4 00	9	32
29—*Child's Self-operating Swing (do. do.)*.		$ 4 00	9	32
30—*Improved Table Croquet (Horsman)*		$ 3 00	8	30
31—*Utility Adj. Table (Lambie & Sargent)*		$ 8 00	16	52
32—*Boudoir Clock (S. B. Jerome & Co.)*...		$ 3 50	8	30
33—*Houchin's Improved Patent Pocket Cook Stove*........		$ 1 50	4	....
34—*Self-adjusting Gold-plate Watch Key, (J. S. Birch.)*........		$ 1 00	3	....
35—*Pocket Tool Holder (Miller's Falls Co.)*		$ 1 00	3	....
36—*Piano, Splendid 7-oct. (Steinway & So's)*		$650 00	625	1630
37—*Tea Set (Lucius Hart Man'fact'g Co.)*.		$50 00	66	225
38—*Ice Pitcher....... (do. do. do.)*....		$16 00	24	80
39—*Casters.......... (do. do. do.)*....		$ 9 00	17	54
40—*Cake Basket..... (do. do. do.)*....		$12 00	19	65
41—*Revolving Butter Cooler (do. do.)*....		$ 8 00	16	52
42—*One Dozen Teaspoons (do. do.)*....		$ 6 00	15	45
43—*One Dozen Tablespoons (do. do.)*....		$12 00	19	65
44—*One Dozen Table Forks (do. do.)*....		$12 00	19	65
45—*Child's Cup (do. do.)*....		$ 2 75	7	27
46—*Child's Knife, Fork & Spoon (do.)*....		$ 5 00	12	37
47—*W. S. Blunt's "Universal Force Pump"*		$12 00	19	65
48—*Moore's Floral Set (Moore Man'f'g Co)*		$ 1 00	3	....
49—*Cahoon's Broadcast Seed-sower*........		$ 5 00	12	37
50—*Bracket Saw (Millers' Falls Man'f Co.)*		$ 1 25	4	....
51—*Payson's Indelible Ink—Pen, etc*.......		75	3	....
52—*Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)*........		$ 2 75	7	27
53—*Abbott Pocket Microscope (L. G. Abbott)*		$ 1 50	4	....
54—*Silver Watch (American Watch Co.)*..		$30 00	44	144
55—*Garden Seeds & Flower Bulbs (select'n)*		$ 2 00	6	22
56—*Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)*........		$15 00	22	75
57—*Breech-loading Pocket Rifle (Stevens)*.		$16 00	24	80
58—*Sporting & Hunting Rifle (Remington)*		$32 00	48	156
59—*Double Barreled Breech-loading Gun (E. Remington & Sons)*........		$50 00	66	225
60—*Creedmoor Long Range Rifle (E. Remington & Sons)*........		$100 00	110	330
61—*Turn-table Apple Parer (Goodell Co.)*.		$ 1 00	3	....
62—*Climax Apple Corer & Slicer (do.)*		$ 1 00	3	....
63—*Family Cherry Stoner (do.)*		$ 1 00	3	....
64—*Bay State Apple Paring and Slicing Machine (Goodell Co.)*........		$ 1 50	4	....
65—*Sewing Machine (Remington)*........		$70 00	80	298
66—*Reid's Patent Butter Worker*........		$10 00	18	58
67—*Family Scales (Fairbanks & Co.)*......		$14 00	21	70
68—*Washing Machine (Doty's)*........		$14 00	21	70
69—*Clothes Wringer (Best—Universal)*....		$ 8 00	16	52
70—*Worcester's Great Illust'ed Dictionary*		$10 00	18	58
71—*Any back Volume Agriculturist*	*Unbound. Post-paid.*	$ 1 75	.....	20
72—*Any Two Back Volumes do.*		$ 3 50	.....	29
73—*Any Three do. do. do.*		$ 5 25	13	37
74—*Any Four do. do. do.*		$ 7 00	15	47
75—*Any Five do. do. do.*		$ 8 75	17	54
76—*Any Six do. do. do.*		$10 50	19	61
77—*Any Seven do. do. do.*		$12 25	21	68
78—*Any Eight do. do. do.*		$14 00	23	74
—*(Each add'l Vol. at same rate.)*				
79—*Twenty Vols. XVI to XXXV.*		$35 00	47	162
80—*Any Back Vol. Agriculturist*	*Bound. Post-p'd.*	$ 2 50	.....	24
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85—*Any Six do. do. do.*		$15 00	24	82
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—*(Each ad'l volume at same rate)*				
88—*Twenty Vols. XVI to XXXV.*		$50 00	68	220
89—*A* **$10** *Library (Your Choice.)*	*All sent paid through, by Mail or Express.*	$10 00	18	58
90—*A* **$15** *Library do.*		$15 00	24	85
91—*A* **$20** *Library do.*		$20 00	31	106
92—*A* **$25** *Library do.*		$25 00	38	125
93—*A* **$30** *Library do.*		$30 00	44	144
94—*A* **$35** *Library do.*		$35 00	50	162
95—*A* **$40** *Library do.*		$40 00	56	177
96—*A* **$45** *Library do.*		$45 00	62	192
97—*A* **$50** *Library do.*		$50 00	68	207
98—*A* **$60** *Library do.*		$60 00	80	237
99—*A* **$75** *Library do.*		$75 00	100	282
100—*A* **$100** *Library do.*		100 00	125	360
101—*A Choice of Good Books. (See Description.)*........				

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 9.

Are Jerseys or Short-horns the more Useful ?—"C. E. B.," Springfield, Ill. These two breeds are both indispensable, and cannot be compared with each other as to usefulness. To reply to the above question is as impossible as to decide whether a horse or a cow is the more useful of the two. Their purposes are distinct; one gives rich milk, the other is a beef animal. Both butter and beef are necessary, and we can no more do without the one than the other. To dispute about such a question is a waste of time.

To Rid a Colt of Worms.—"J. T.," Greenfield, Conn. Give an injection of salt and water, about one ounce of salt to a quart of water; the next day give a quarter of a pint of linseed oil by the mouth.

Crude Petroleum as a Paint.—"E. O. N.," Tracy City, Tenn. We have frequently expressed a favorable opinion of petroleum as a paint for fences, sheds, and out-buildings, and after using it have no reason to change our view. Recently we used it as a priming coat, and found lead paint to cover it very well. It gives a sort of dull brown color to the wood to which it is applied, but for out-buildings or fences, this is not disagreeable. Colors do not mix well with it, as the oil penetrates the wood, and the color is left upon the surface, from which it soon falls or is rubbed off.

Spring Wheat in Ohio. — "W. F. S.," Union Co., Ohio. Spring wheat is not usually a profitable crop in Ohio. It requires a more northern climate. It would be a waste of time to try to grow it. Barley would be a much more profitable crop.

The Goodenough Horse-Shoe. — "W. E. P.," Port Gibson, Miss. The peculiarities, or rather the advantages, of the Goodenough shoe are, that it is made with several projecting points which give it a firm hold upon the ground, and prevent slipping and wearing of the heads of the nails, that it has no calks, and permits the frog to come to the ground, thus preventing those diseases of the foot which result from cutting away of the frog and raising it from the ground, so that it cannot be brought into its natural action. The shoes, of any sizes, are sold at about the prices of other shoes by the Goodenough Horse-shoe Co., New York.

Corn Planters.—"G.," Jefferson Co., N.Y. We have used Emery's corn planter for sowing fodder-corn in drills, and there are other planters suitable for this work. Corn may be sown with the common grain drill, by closing all the spouts, except the middle and end ones, making three rows in the width of the drill.

Comparative Value of Hay, Corn-Meal and Bran.—"H. G.," Allendale, N. Y. The estimated comparative values of hay, corn-meal, and bran, for feeding, are as follows: 1 ton of hay is equal to 500 lbs. of corn, or to 800 lbs. of bran; hay at $10 a ton is equal to corn at $40, and bran at $25 a ton. This is predicated from the quantity of nutriment contained in equal given quantities. But the whole of the corn is not digested and a loss is sustained in consequense of that; it would be safe to reduce the value of corn-meal at least one-fourth on that account, or to a proportionate value of $30 a ton. These approximate values are corroborated by many experiments in feeding.

Shepherds' Dogs.—In view of the large inquiry for shepherds' dogs, it would certainly be profitable for some competent person to make a business of breeding and training them, and then to inform the public of the fact by advertising it. There is a great need for trained dogs, and hundreds could be sold if those who want them could find them. A well trained sheep dog is worth $100 to any shepherd, but it would pay some one well to raise and train them for a quarter of that price.

Warts. — "Reader," Austin, Texas. Warts are tumors caused by a diseased enlargement of the vascular papillæ of the skin. The cause of this growth is not understood. The only remedy is excision, or removal of the diseased portion of the skin, by caustics. If the warts are small, or have a narrow stem, they may be removed by tying a silk or other strong thread around them so tightly as to arrest the circulation, when they will soon drop off. Or they may be clipped off with a pair of shears, and the wound touched with a hot iron or lunar caustic, (nitrate of silver). If they are broad and flat, their removal may be effected by the use of nitric acid with which the surfaces may be touched daily, until they are eaten away, when the raw spot may be dried and healed by the application of a solution of sulphate of copper (blue vitriol). Where the warts are very large and numerous, and a cure would cost more than the animal is worth, it should be fed for the butcher. No warty animal should be used for breeding.

Horse Racing at Fairs.—"G. W. L.," Delaware Center, Iowa. Whether or not county fairs can be made successful, without horse trotting, must depend upon the condition of public sentiment. There are localities, (a very few), where a whiskey shop would be an unprofitable speculation; and in the same degree, we fear, a genuine agricultural fair would be very rarely successful. The idea has often occurred to us, that if farmers who object to the trotting would keep away from it, or from the fairs where it is the chief attraction, or protest against it, something might be done. But while people continue to go to see the racing, and pay for it, the amusement will surely be provided for them.

To Get Rid of Quack Grass and Thistles.—"H. F. G.," Allendale, N. Y. To destroy quack grass of any of the different species to which this term is applied, the ground should be plowed and harrowed thoroughly and the roots picked off the surface. A rake for this purpose was described in the *American Agriculturist* of Nov., 1865. Any left will grow again. Potatoes, corn, beans, or other hoed crops should be grown and kept cultivated and weeded thoroughly. There will be little quack left after three clean hoed crops have been taken. Thistles may be destroyed by plowing lightly, so as to cut the stem but not the roots, and then growing crops that are cultivated continually.

Salting Beef.—A correspondent in Haverhill, Mass., sends the following as his method of putting down beef. Select a barrel that is strongly hooped, and fit a board of sufficient thickness, so that the bottom of the barrel may rest on that, instead of the chine. Place it in the cellar, directly under a solid floor beam. Cover the bottom of the barrel with salt, then put in a layer of beef, the pieces being cut small enough to pack close, and pound them down with a club; then sprinkle them over with sugar and salt. Continue putting in layers of beef, pounding them down, and sprinkling on salt and sugar, until all is packed. Use six quarts of salt, and 3 or 4 lbs. of sugar to each 100 lbs. of beef. Place a strong follower in the barrel upon the beef, and set a piece of joist upon the follower, so that the end of the joist will come under the beam; drive a wedge between this and the beam above, pressing the beef quite hard; every twenty-four hours drive up the wedge, and the beef will soon be covered with brine. After a few days the pressure may be removed.

Pennsylvania Poultry.—"M. R.," New York. The chickens and capons from Bucks and the adjoining counties in Pennsylvania have the best reputation in the city markets. Capons are made to weigh 12 pounds, and sell at 35 to 40 cents a pound. The poultry is mostly of the Dorking, Dominique, and common breeds, but it is the management rather than the breed, that produces the high quality. The chickens are brought out early in the season, and are well fed from the first. The cocks are made into capons. About three weeks before marketing the birds are put up in coops, and fed upon soft food, consisting of corn and oat meal, potatoes, and some scraps of fat meat or chopped suet. This is given several times a day in small quantities. Many spring chickens are sent to market from these localities which bring the highest prices, generally at about 50c. per lb.

Holes in Trees.—"W. A.," Union Grove, Wis. The holes around the stocks of your trees are no doubt the work of some species of woodpecker. It will require an examination to determine whether these holes injured the trees, or if it is due to the work of the insects which the birds were after.

Another Potato Enemy—fortunately for us in Algiers, is now reported. The parent insect is a moth; its caterpillar lives in the potato—the tuber itself—and by the time it is through with it, the potato is not even fit for the pigs. The scientific name of the insect is *Bryotropha solanella*, and it is hoped that we shall only know it by name.

Answering by Numbers.—Sometimes a correspondent asks several questions, and puts a number opposite to each. Thinking it may save space in the paper, and save us the trouble of copying his questions, he adds, please answer by the numbers. This is a request with which we can not comply. If we print, "6. No. Six inches will be wide enough, if the material is strong," the one who proposes No. 6 will know what it means, but every one of the thousands of other readers will be completely in the dark. Those who ask us to "reply by numbers," will see how unfair it is to every other subscriber. We have often stated, and we find it necessary to repeat it, that if the question is a merely personal one, and its answer will be of no use to a considerable number of readers, it has no chance whatever of a reply in the paper. This is one of the reasons why we insist that every one who asks a question, should give name and address. We answer hundreds of letters by mail, because we do not care to occupy space with matter which, if not of general interest, will at least be useful to a considerable number. To make the matter intelligible, we always give the question, or the substance of it, before answering it.

What to Do with the Straw.—"A. M. Van A.," Fort Howard, Wis. When a farmer can dispose of a load of straw to a livery stable for 8 loads of manure in exchange, he wants no better way of using his straw. But few farmers are so favorably situated as this. There should be no trouble about using the straw, if one has roots to feed with it, and sufficient capital to buy a few head of cattle to winter over. Then half a dozen thin cattle, which are easily picked up for the cash anywhere, may be purchased, and put loose into box stalls, and each one fed with a bushel of roots and two or three pounds of meal daily, and all the straw they will eat. The straw should be cut in a fodder cutter, and the refuse used for bedding. The litter and manure may remain until spring beneath the cattle. The increase in value of the cattle should pay a profit, and there will be a valuable pile of manure to grow more roots with.

A Good Cow in South Carolina.—"W. W. R.," Pendleton Factory, S. C., writes that his cow, a grade Ayrshire, was awarded the first premium for the best milk cow at his county fair, where she gave 13½ quarts of milk at one milking. The same cow also took the first premium for milk cows at the S. C. State Fair. He thinks this a very good result for a cotton State.

The Value of Pea-nuts as Feed.—"W. W. L.," Saluda, S. C. Pea-nuts are a very rich food, as they contain from 40 to 50 per cent of oil. When this oil has been expressed, the residue or cake has about 7 per cent of oil left in it. An analysis of this cake recently made by Dr. Vœlcker, gave as follows, as compared with linseed cake, viz.:

	Cake free from husk.	*Unhusked Cake.*	*Linseed Cake.*
Moisture	9.58	9.28	11.72
Oil	7.40	6.99	12.09
Starch, gum, and diges. fiber	27.63	23.67	25.29
Albuminous matters	42.81	32.81	32.64
Indigestible fiber	7.87	23.80	11.79
Ash	4.71	3.45	6.47
Total	100.00	100.00	100.00

The pea-nut cake contains about 7 per cent of nitrogen, and is therefore a very valuable feed for growing animals, as well as fattening beasts. We do not know of any having been used in this country, we believe that all that is made here is exported to England, which should not be.

Flat-Bottomed Boats.—"C. H. A. W.," Napa, Cal. A description, with illustrations, of a flat-bottomed boat, suitable for fishing or hunting, was given in the *American Agriculturist* for Nov., 1876. From this description any one who can use tools can build the boat, at the cost of five or six dollars for materials.

Egg-bound Fowls.—"R.," Garrettsville, Ohio. It is not at all uncommon for hens, especially old and infirm ones, to become egg-bound. The eggs without shells collect in the egg-passage, and form a mass of hard, cheesy matter, which in time causes the abdomen to swell, and finally kills the fowl. We know of no remedy, except to anticipate the end and decapitate.

"Prepared Foods" for Cattle, Poultry, etc.—We dislike secrecy in all things. Secret medicines we do not publish. We have in some cases allowed the advertisements of foods for cattle, poultry, swine, etc., to appear in our columns. In *every instance* the proprietors of the articles have been informed that we could publish upon only one condition—that they must show us the formula by which the compounds are prepared, that we may know their exact composition. Those who have good articles are perfectly willing to do this, and the appearance of an advertisement of any of them indicates that we know what it is made of, and did we wish such an article, would make use of it ourselves. We can say in general terms that these compounds consist of well known tonics and appetizers, and as they are made up ready for use, the owners of animals of various kinds have at hand a condiment, which is about as cheap, considering the trouble, as if they bought the ingredients, and made it themselves, and being at hand, they are likely to use it when needed. We have given considerable thought to this matter, and acting wholly in the interest of our readers, have taken the course above indicated. Of course, each one must judge for himself, if it is desirable to use such condiments, and if he decides to give them, he can do so with the assurance that he is giving nothing deleterious.

"Science Applied to Farming," Correspondence.

COMPOSTING COTTON-SEED. — "J. B.," Mississippi. The newspaper articles on composting cotton-seed, you refer to, are evidently abbreviated from Circulars 22 and 26 of the Georgia Department of Agriculture. I cannot testify to the utility of the processes recommended from actual experience, but from the chemical standpoint, the plan of mixing cotton-seed with manure, earth, and acid phosphates, is eminently rational, and ought to prove excellent. The directions below are taken from the circulars referred to. The farmers of Georgia, by the way, are remarkably fortunate in having so enterprising an Agricultural Department to look out for their interests.

FORMULAS FOR COMPOSTING COTTON-SEED.

If the stable manure and cotton-seed have been preserved under shelter, and the compost is for oak and hickory lands, use the following:

NO. 1.—FOR A TON OF 2,000 LBS.

Stable manure	750	pounds.
Cotton-seed (green)	750	"
Acid Phosphate or Dissolved Bone	500	"

Directions for Composting.—Spread under shelter a layer of stable manure 4 inches thick; on this sprinkle a portion of the phosphate; next spread a layer of cotton-seed 3 inches thick; *wet these thoroughly with water* and sprinkle with phosphate; next spread another layer of stable manure *three* inches thick. Continue to repeat these layers in the above order until the material is consumed. Cover the whole mass with stable manure or scrapings from the lot one or two inches thick. Allow the heap to stand in this condition until a thorough fermentation takes place, which will require from three to six weeks, according to circumstances, dependent upon moisture and the strength of the materials used. When the cotton-seeds are thoroughly killed, with a sharp hoe or mattock, cut down vertically through the layers; pulverize and shovel into a heap, where the fermentation will be renewed and the compost be still further improved. It is now ready for use.

For Cotton.--Apply in the opening furrow 200 pounds per acre, and with the seed at planting 75 or 100 pounds per acre, making in all 275 or 300 pounds per acre. If it is desired to apply a larger quantity per acre, open furrows the desired distance, and over them sow broadcast 400 pounds per acre; bed the land, and then apply 100 pounds per acre with the seed.

For Corn.--Apply in the hill, *by the side* of the seed, half-pint to the hill. An additional application around the hill before the first plowing, will largely increase the yield of grain.

For sandy pine lands, dissolve sixty pounds of muriate of potash in warm water, and sprinkle a proportionate quantity of the solution on each layer of stable manure and cotton-seed. The same weight of cotton-seed and manure, or 60 pounds of the two, may be omitted when the potash is used.

If lot manure, or that which has been so exposed as to lose some of its fertilizing properties, is composted, use:

NO. 2.—FOR A TON OF 2,000 LBS.

Lot manure	650	pounds.
Cotton-seed	650	"
Acid Phosphate	600	"
Sulphate of Ammonia	60	"
Muriate of Potash	40	"

Mix as in No. 1, except that the sulphate of ammonia and muriate of potash must be dissolved in warm water, and a proportionate part of each sprinkled on each layer of manure and cotton-seed.

Directions for the use of these composts have been given only for corn and cotton—the two crops to which fertilizers are principally applied in Georgia. Experience, however, has shown them to be equally efficacious when applied to other crops, either field or garden. From 300 to 400 pounds to the acre on small grain have produced perfectly satisfactory results.

Varying proportions of Cotton-seed Manure.—In making these composts the proportions of stable manure and cotton-seed may be varied to suit the supply at command, though care must be taken, if the cotton-seed are largely in excess, to avoid excessive heat and consequent cooking of the seed. When killed, the seed should be soft enough to be readily mashed between the fingers. If only cotton-seed and acid phosphate are composted, the seed should be *rolled in the phosphate*, and shoveled into a heap to ferment. If composted in layers without stable manure, the seed will cake together.

Potash, where needed.—In the above formulas the potash may be omitted on lands, comparatively fresh, and on which the original growth was oak and hickory; but if such lands have been much worn, it will be well to retain it. The presence of oak and hickory, or other potash consuming growth, is an indication of the presence of potash in the soil. When such lands, however, have been so worn that when turned out, stunted old field pines spring up, it is safe to assume that the addition of a moderate quantity of potash will increase production.

Concerning the use of potash on pine lands, the advice is given without statement of the grounds upon which it is based. It is presumed, however, that the statements would not be made without good reason. In lack of stable manure, the plan of composting the cotton-seed in layers with three or four times its bulk of earth would doubtless be excellent.

ACID PHOSHATES.—In Table 36 in the December *American Agriculturist*, were mentioned two superphosphates without nitrogen. These were imported from England, where they are manufactured cheaply, and of very high grades. A sample exhibited at the Centennial, and said to be made in this country, was guaranteed to contain about 31 per cent of soluble phosphoric acid. The price was $65 per ton, which would bring the soluble acid at about 10½ cts. per lb. The acid phosphates of our markets, however, are very seldom as rich as this, but more frequently contain 5 to 15 per cent of the soluble acid. Generally speaking, the highest grades are the cheapest, in the large markets were they are manufactured or imported. In places distant from the markets, the difference in favor of the high grades is still greater, on account of the cost of transportation. It costs no more to freight a ton of a 30 per cent, than a ton of a 10 per cent article. In the one case, the cost of freight is divided over 600 lbs., in the other, over only 200 lbs. of soluble phosphoric acid.

The greater part of these articles are manufactured from the fossil and mineral phosphates from South Carolina and Navassa, and contain more or less of useless material, as iron and alumina, which are valueless, increase the bulk and weight of the fertilizer, and, still further, cause some of the phosphoric acid, which has been rendered soluble by addition of sulphuric acid to change to the less soluble, and consequently less valuable form, known as "reverted," "reduced," or "precipitated" phosphoric acid. Still, since the supply of bones and bone-black is not sufficient to supply the demand for phosphoric acid, these materials must be used, and are used with profit.

How Bone-Dust is Made.—"J. W. S.," Union Co., Pa. Bone dust is made either as a refuse product in the manufacture of knife handles, buttons, and other articles, for which the shins and other hardest bones are used, or common bones are ground in a mill, such as the Bogardus Eccentric Mill, or others made for the work. The ground bones are sifted and separated into coarse, fine, or finest, or sold as they come from the mill.

Special Fertilizers.—"E. E.," Linden, N. J. Soluble fertilizers, such as guano or nitrate of soda, are useless, if not injurious, in a dry season. Without abundant moisture their solution is too concentrated, and destroys the tender extremities of the rootlets by which nutriment is absorbed. Too much water would carry the soluble matter down to the roots faster that it could be taken up, or if the plants are not in active growth, the fertilizing matter could not be appropriated. For these reasons we would use but very little of such soluble fertilizers in the fall, but apply the bulk of them in the spring, as soon as growth begins. Guano and nitrate of soda are generally used at the rate of about 250 lbs. of the former, and 150 lbs. of the latter, per acre.

Draining a Marsh by Pumping.—"Subscriber." There would be no difficulty in draining a marsh by raising an embankment around it, and pumping the water out of the ditches, if the land is worth the expense. The work would probably cost $40 or $50 per acre, and the pumping would be a continual expense. Before engaging in it, a competent engineer should be consulted, or the cost may be double what it ought to be.

Sprain of the Hip Joint.—"G. D.," Beans Corner, Me. The wasting of the muscles of the hip do not certainly indicate disease of the hip joint. The trouble may be in the hock. If it should be ascertained beyond doubt to be in the hip, the horse should have perfect rest for a few weeks. Cloths dipped in cold water should be laid over the hip, to reduce any heat of the parts, and when this is removed, the following may be rubbed on with the hand every second day, viz., turpentine one ounce, oil of cloves two ounces, creosote one ounce. Perseverance for a few weeks in this treatment may result in a cure. If not, a seton may be used, but only by a veterinary surgeon.

The Basis of Values of Fertilizers. "W. H. R.," Lexington, Va. The basis upon which the values of fertilizers are estimated, is derived, as near as may be, from the commercial values of those substances which supply the different ingredients most readily. Thus the value of nitrogen is based on the market price of nitrate of soda; ammonia is valued according to the price of guano, or that of sulphate of ammonia, a constant production of the gas works and a staple article in the market. Phosphoric acid is valued according to the price of bones or phosphates produced from them. In this way we get a settled basis of values. Ammonia is not now valued at 30 cents a pound; 25 cents or less, is a fair value, and phosphoric acid is valued at 12 cents for soluble, 8c. for reverted, and 6c. for insoluble. Of course the prices of these substances as fertilizers is regulated by their value for other uses, and *vice versa.*

Sowing Wheat on Clover Sod.—"I. R. C,," Holder, Ill., suggests the following manner of sowing fall wheat, viz., sow the seed on a clover sod, and plow it under, turning the sod to a depth of two inches only; then roll the ground.

Manhattan Blood Guano Co.—We are informed that Mr. Thos. J. Hand has retired from the Manhattan Blood Guano Co., and that Mr. E. F. Cooke is now the sole agent. The business is now conducted by Messrs. Wing & Evans.

Somebody Blundered.—The crews of the returned ships Alert and Discovery, of the British Arctic Expedition suffered terribly from scurvy. In this day of canned fruits and vegetables—about which, by the way, the English know but little—and when potatoes are so dried as to be difficult to tell on the table from fresh, these ships were sent to sea without proper stores. In our late civil war, the army was abundantly supplied with dried and canned vegetables of all kinds, but it takes people on the other side a long while to learn.

Paralysis in Hogs.—"W. M. S.," Aiken, S. C. It is difficult to decide what has caused the disease in your hogs, without knowing how they have been treated. If they have been kept in the woods, and have slept in cold, damp places, that would be quite sufficient to account for it. In this case the hogs should be well taken care of, fed with boiled potatoes, or boiled corn, given very slightly warm, and have good, warm pens and bedding. The weak parts should be rubbed with turpentine, and a piece of blanket should be tied around the body. But the cause may be parasites in the muscles or kidneys; if so, a cure is almost hopeless. Parasites may be prevented by keeping the hogs in pens, and not permitting them to eat offal or filth.

To get rid of Stumps.—"T. R. M." Probably the easiest way to remove stumps is by blasting. Dynamite is now used for this purpose with good effect. But an experienced hand is required to use the explosive, which is many times more powerful than common blasting powder.

Popular Scientific Works.—We some months ago referred to the excellent service rendered by Messrs. D. Appleton & Co., N. Y., to the advancement of science by the publication of works, which, though popular, are by the most eminent men at home and abroad. "Smatterers" in science have had their day, and it is now conceded that only thorough masters of a science are safe popular teachers.

DARWINIANA.—Under this title are brought together in a neat volume of nearly 400 pages, the writings by Prof. Asa Gray, upon what is popularly known as Darwinism. Most of the chapters have appeared as articles in the various reviews and journals during the past 16 years. The general reader will probably get from this a much better idea of Darwin's views, than if he read Darwin's own works, and will also see how they are regarded by one abundantly able to test their accuracy as relates to at least one department of science. Price, $2.00.

THE RACES OF MAN, AND THEIR GEOGRAPHICAL DISTRIBUTION, by Oscar Peschel. This is a translation of one of the most recent and valuable works of the present time, and presents in a readable form the present state of our knowledge as to the history, and development, of our race, a subject now receiving much attention at the hands of scientists, and which has an interest for all intelligent readers. Pp. 528, Price $2.25.

SOUND, by John Tyndall, D. C. L., etc.—Those who heard or read Prof. Tyndall's lectures, or are familiar with his former works on heat, etc., need not be told how admirably he presents his subjects, and the remarkable clearness in which he places matters usually regarded as abstruse. The present work is the third edition revised and enlarged. Prof. T. informs us in his preface that an earlier edition enjoyed the distinction of being translated into Chinese, and published by the Chinese government. Price, $2.00.

THE THEORY OF SOUND IN RELATION TO MUSIC, by Prof. Pietro Blaserna.—This is one of the International Scientific Series, and its author a resident of Rome, Italy. It covers a very different ground from Tyndall's work; that is a manual of acoustics, to illustrate principles, while this makes a practical application of the principles to music. This work commends itself to every musician who would understand the fundamental laws upon which his art is based. Pp. 187, Price $1.50.

Botanical Hand-Book, by C. E. Hobbs, especially designed as a reference book for druggists and apothecaries. This gives the various English names, the botanical and officinal names of all the crude vegetable drugs in common use. It shows much patient, painstaking work, and is a book which we can commend to our many pharmaceutical friends. Published by A. C. Hobbs, Sommerville, Mass. Price, $3.50.

Reports and Proceedings.—In order to start square with the new year, we acknowledge the following, received in the latter part of 1876. We hope our friends, to whom thanks for their attention, will not measure our appreciation of their kindness by the brevity of our notices.

THE MASSACHUSETTS STATE BOARD OF AGRICULTURE.—The Report of the Secretary, Chas. L. Flint, Esq. for 1875, though not so profusely illustrated, as some previous ones, seems to contain an unusual number, (even for this Report), of useful and practical articles, some of which we have read with pleasure and profit.

THE WISCONSIN STATE HORTICULTURAL SOCIETY.—Transactions of the annual meeting, held Feb. 1876, compiled by F. W. Chase, Sec., has a handsome frontispiece in a colored print of Whiting's Siberian Crab, No. 20, one of the "iron-clads;" the reading matter covers a wide range, and what is sometimes overlooked, is *local*, and consequently useful to the people of the State.

THE IOWA STATE HORTICULTURAL SOCIETY'S REPORT for 1875 and a part of 1876, contains useful papers and discussions, but there is some of the strangest matter, called "botany," that we ever saw in print. Has the Society no botanist among its members to correct these glaring inaccuracies?—If not, suppress the matter.

FOREST TREES OF THE U. S.—This is a list with useful notes, of the remarkable exhibition of forest trees, in the U. S. Government Building, at the Centennial, which was made through the industry of Doctor Geo. Vasey of the Department of Agriculture. We hope that a building will be provided at Washington for this collection which should be preserved not only for its intrinsic value, but as a proper acknowledgment of the labors of Dr. V., and those who aided him.

FORESTS AND FORESTRY at the Vienna Exhibition in 1873. Sometimes it does happen that our Government blunders into putting the right man in a place. This was done when Dr. John A. Warder was sent to represent us at Vienna, and why his experience and great knowledge were not made available and used in our own exhibition, is "one of those things no fellow can find out."—They didn't, and he didn't, and that's all any one knows about it. This Report on Austrian Forestry, and the Schools of Forestry, will in the future, when we think and act in this direction, be of even more value than it is at present.

Educational and School Books.—We have received from E. Steiger, 22 and 24 Frankfort st., N. Y., the publisher, who has done so much to introduce the kindergarten:

FRIEDRICH FRŒBEL, a Biographical Sketch, by Matilda H. Kriege, pp. 29. Price, in paper, 25c.; in cloth, 50c. This sketch of his life, with a portrait of the "Children's Friend," will be welcomed by the increasing number of those interested in his life-work, the kindergarten.

THE SCIENCE AND ART OF EDUCATION, by Joseph Payne, of London, is a small work uniform in size and price with the above.

The following have been received from A. S. Barnes & Co., No. 111–113 William St., N. Y., a firm long known as one of the leading houses engaged in publication of school books. Their works are mechanically all that can be desired, and the names of the authors of eminence who contribute to their list of elementary works, indicate the high character of their publications. In the crowded state of our columns we can only notice them as bills in Congress are too often read—by title:

FIRST STEPS IN GENERAL HISTORY. By Arthur Gilman, pp. 385. Price, $1 25.

SEVEN HISTORIC AGES. Same author; pp. 144. Price, $1. The first of these is a compendium for the use of schools, and for reference; a very full bibliography adds to its value. The second is a familiar talk with children on the marked historic ages.

FIRST STEPS IN ENGLISH LITERATURE. By the same; pp. 233. Price, $1.

MANUAL OF GEOMETRY. By W. G. Peck. Price, $1 60.

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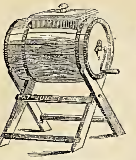

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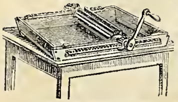

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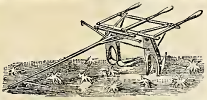

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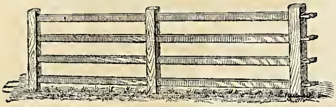

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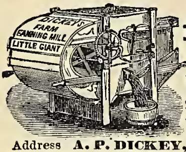

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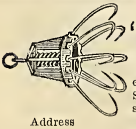

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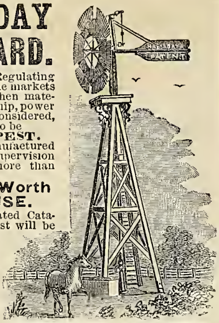

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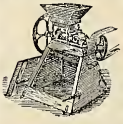

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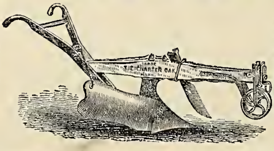

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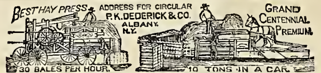
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10 TONS IN A CAR.

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Are carefully made, and are of such a quality and form as to work with smoothness, thus avoiding altogether the usual irritation attending the shearing of horses.

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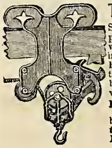

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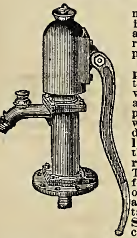

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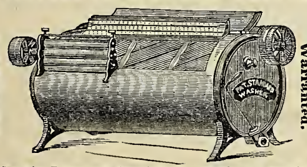

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Introduced 9 Years.
Thousands in Use. Once used, never dispensed with.

Agents Wanted *at once in valuable Territory. Circulars on application.*

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See December number, 1874, page 463.

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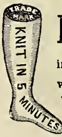

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Specialties in Ladies Underwear.

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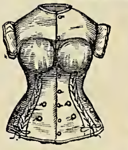

Fig. 1.

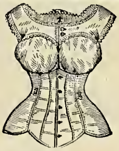

Fig. 2.

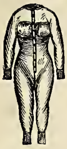

Fig. 3.

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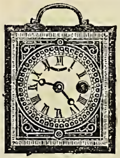

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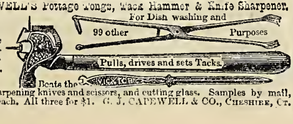

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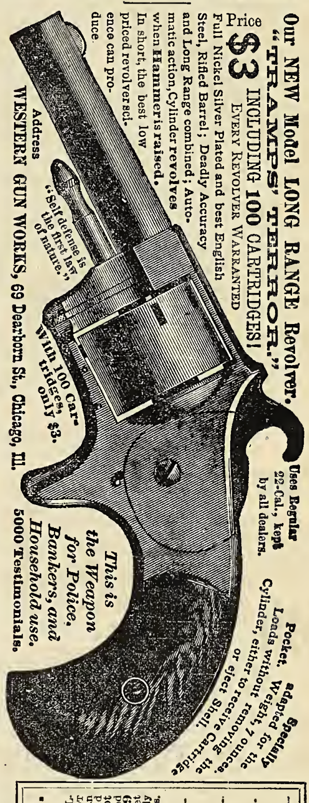

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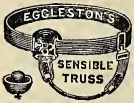

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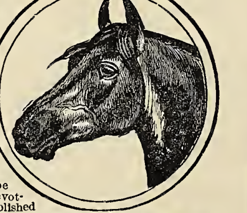

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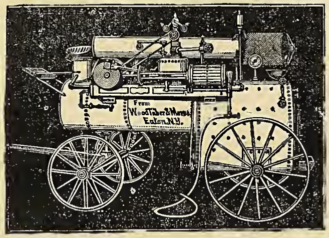

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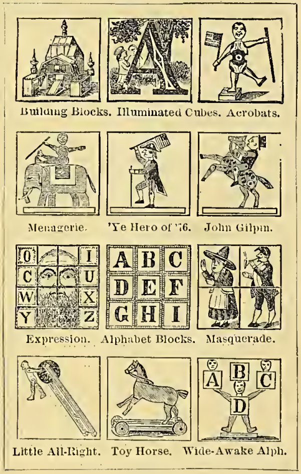

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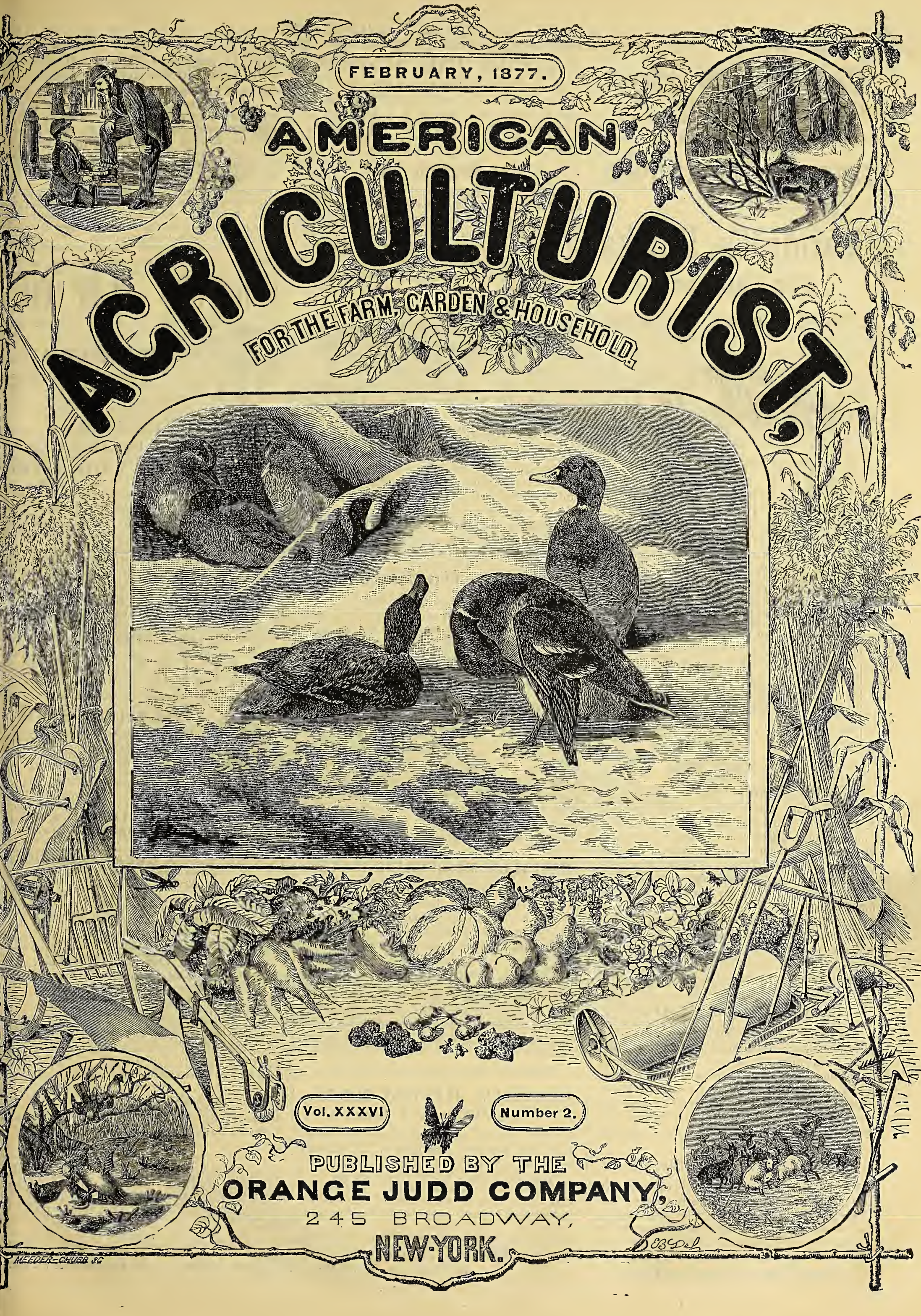

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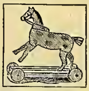
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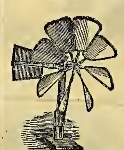

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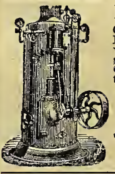

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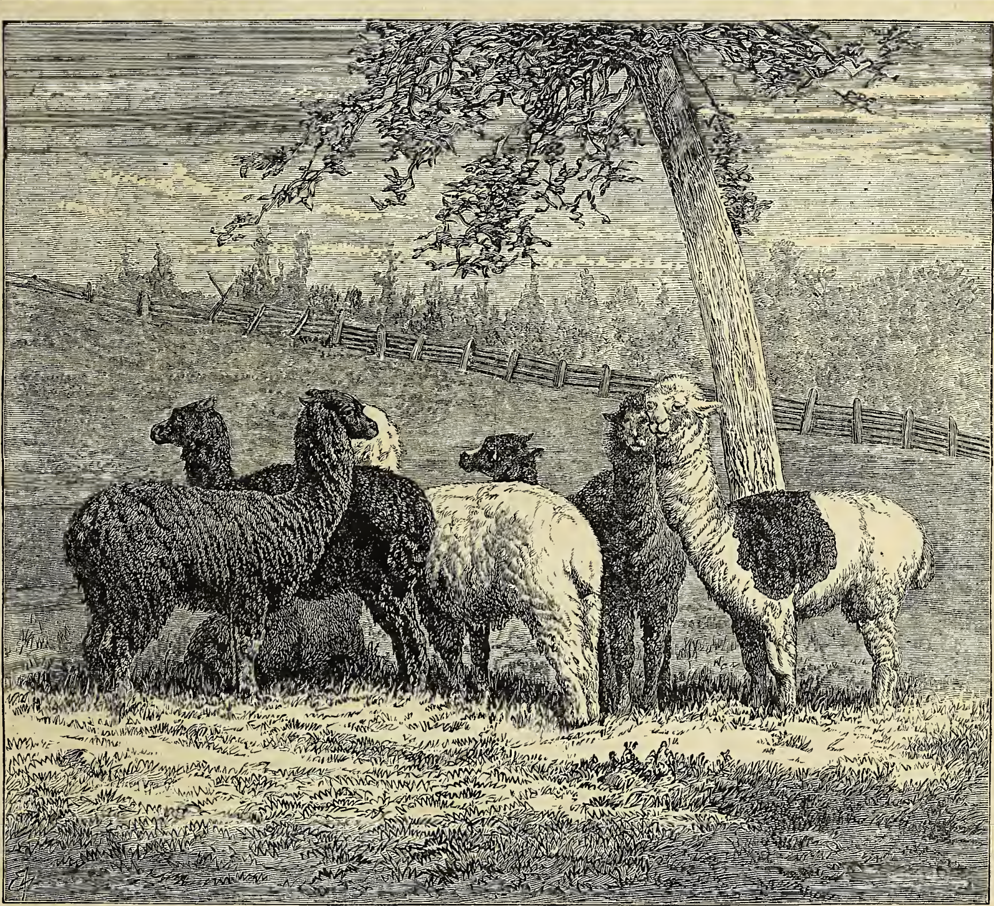
VOLUME XXXVI.—No. 2. NEW YORK, FEBRUARY, 1877. NEW SERIES—No. 361.



A FLOCK OF ALPACAS.—DRAWN FROM A PHOTOGRAPH.—*Engraved for the American Agriculturist.*

The Alpaca, a flock of which is represented in the above engraving, is sometimes classed as a sheep, and sometimes as a goat. It is, however, not properly either of these, but belongs to the genus *Llama* of the Camel family, and is closely allied to the Camel. It is a native of the mountainous portions of Peru, where it thrives upon the coarse and scanty forage found in such situations. The engraving is from a photograph of a flock, imported about a year ago by the late ex-governor Thomas, of Maryland, and which was sold and dispersed last summer, by order of the executors of the Thomas estate. What disposition was made of the animals, we have not learned, but hope that they fell into the hands of parties who are willing and competent to give them a full trial in this country. The animal is valuable for its fleece, and in its native country it serves as a beast of burden, being used to carry packs up and down the rugged mountain roads. The fleece consists of a long, lustrous, hairy wool, or wooly hair, which is fine and elastic. From this is made the fabrics known as "alpaca," and many small wares, such as braids and tassels. From other varieties, having somewhat different wool, softer kinds of goods, including gloves, are made. Their usefulness here will depend altogether on their becoming acclimated in this country. Considering the great diversity of climate and locality we possess, there can be but little doubt that, if the Alpacas are tested in the right place, they will adapt themselves to it. The proper locality for their acclimation would seem to be some mountain region, of which we have sufficient to accommodate all the animals we might need to supply all our manufactures. The flesh of the Alpaca is eatable, and the animal is very docile and easily kept. Its form is picturesque, and should make it sufficiently attractive and promising, to induce some persons of wealth and enterprise, who possess country places, to experiment with it, not only for their own pleasure, but for the possible or probable public advantage that might accrue from it.

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"Walks and Talks."

The writer of "Walks and Talks on the Farm," published in the *American Agriculturist* for ten years or more, has during the past 14 months been quietly attending to his farm-work, gathering experience and observation, and in writing a Book on Manures, now about completed. We take pleasure in announcing that he will resume his pen in the next number of the *American Agriculturist*, in a new series of articles "Talks on Farm Crops," to continue through the year. This will be a pleasant announcement to many of our readers, who have "walked and talked" with him in past years.

Calendar for February.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	T	7 14	5 14	9 40	7 10	5 18	9 39	7 6	5 22	9 39
2	F	7 13	5 16	10 54	7 9	5 19	10 51	7 6	5 23	10 50
3	S	7 11	5 17	morn	7 8	5 21	morn	7 4	5 24	morn
4	**S**	7 10	5 19	0 6	7 7	5 22	0 2	7 3	5 25	0 0
5	M	7 9	5 20	1 16	7 6	5 23	1 10	7 2	5 26	1 5
6	T	7 8	5 21	2 24	7 5	5 24	2 20	7 1	5 28	2 13
7	W	7 7	5 22	3 28	7 3	5 25	3 22	7 0	5 29	3 15
8	T	7 5	5 24	4 24	7 2	5 27	4 18	6 59	5 30	4 11
9	F	7 4	5 25	5 14	7 1	5 28	5 7	6 58	5 31	4 59
10	S	7 3	5 26	5 52	7 0	5 29	5 47	6 57	5 32	5 49
11	**S**	7 2	5 27	6 27	6 59	5 30	6 21	9 56	5 33	6 15
12	M	7 0	5 29	6 56	6 58	5 32	6 48	6 55	5 34	6 43
13	T	6 59	5 30	sets	6 56	5 33	sets	6 54	5 36	sets.
14	W	6 58	5 31	6 57	6 55	5 34	6 59	6 52	5 37	7 0
15	T	6 56	5 33	8 1	6 54	5 35	8 1	6 51	5 38	8 1
16	F	6 55	5 34	9 4	6 52	5 36	9 5	6 50	5 39	9 4
17	S	6 53	5 35	10 11	6 51	5 38	10 8	6 49	5 40	10 5
18	**S**	6 52	5 37	11 19	6 50	5 39	11 16	6 48	5 41	11 12
19	M	6 51	5 38	morn	6 48	5 40	morn	6 46	5 42	morn
20	T	6 49	5 39	0 30	6 47	5 41	0 26	6 45	5 43	0 21
21	W	6 48	5 40	1 41	6 46	5 42	1 39	6 43	5 45	1 32
22	T	6 46	5 41	2 55	6 44	5 43	2 48	6 42	5 46	2 41
23	F	6 45	5 43	3 58	6 43	5 44	3 50	6 40	5 47	3 43
24	S	6 43	5 44	4 51	6 41	5 46	4 45	6 39	5 48	4 38
25	**S**	6 41	5 45	5 33	6 40	5 47	5 26	6 38	5 49	5 21
26	M	6 40	5 46	6 6	6 38	5 48	6 3	6 36	5 50	5 59
27	T	6 38	5 48	6 33	6 37	5 49	6 32	6 35	5 51	6 29
28	W	6 36	5 49	6 57	6 35	5 51	6 57	6 34	5 52	6 57

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	5	0 16 mo.	0 4 mo.	11 52 4th	11 40 4th	11 10 4th
New M'n	13	4 15 mo.	4 3 mo.	3 51 mo	3 39 mo.	3 9 mo.
1st Quart	20	11 32 ev.	11 20 ev.	11 8 ev.	10 56 ev.	10 26 ev.
Full M'n	27	2 30 ev.	2 18 ev.	2 6 ev.	1 54 ev.	1 24 ev.

AMERICAN AGRICULTURIST.

NEW YORK, FEBRUARY, 1877.

It is generally accepted as a truth that the more intelligent a man may be, the more valuable will be his labor. While this is true of all industries, it is especially so in regard to the cultivation of the soil. There are so many circumstances which affect or control the result of a farmer's labor, that he, more than all other men, should be well informed as to the principles and practice of his industry. A very certain measure of a person's intelligence is the extent to which he reads or studies. It is interesting to consider how much or how little farmers are in the habit of reading. A recently published list of Farmer's Clubs in the several States and Territories, which shows that there are 1,897 of these institutions, may throw some light on this question. This is very favorable as far as it goes. But every Farmer's Club ought to have a library, at least for reference, if not for circulation amongst the members. This should be the first requisite for the successful conduct of a club. Now of these 1,897 clubs, only 548 have libraries, and of these libraries only 165 have over 100 volumes. Of the rest, a large majority have from 10 to 30 volumes only; while 1,349 Farmer's Clubs are without a single book. What do the members of these clubs talk about? Without books or papers to inform them, the conversations and discussions can have very little good result. Perhaps this fact accounts for the many wide differences of opinion that exist about very simple matters or questions that are as certainly settled as that the sun rises and sets. Things are constantly talked about and discussed, and experiments proposed and made, over and over again, that have been decided years ago, and the results given in standard and perfectly trustworthy books. A library of at least 100 volumes should belong to every Farmer's Club. This could be purchased for $250 or thereabouts. If there were 25 members only, the cost would be $10 each, and every member would practically own the whole $250 worth for his share of the cost. It is not too much to say that every member would realize the value of his share every year, for there is no place where useful knowledge can be put to more profitable practice than the farm, garden, or orchard.

Hints about Work.

In the Southern States, farmers are busy preparing their ground or planting spring crops, while in the North we are only beginning to think about them. Both there and here, everywhere in fact, early preparations lead to the best results. To have everything ready when the need comes, is the business of the prompt farmer, and the southern farmers should now have all their contracts made for help, their fertilizers secured, and their seed on hand. It has been clearly shown that it is wise to provide for a large increase in the fodder and grain crops, and the number of stock kept in the Southern States. Aside from the difference is climate and seasons, what is good for the northern farmer is advantageous for the southern farmer. Oats sown this month will not tiller like the fall sown; 2 to 2½ bushels of seed will be needed.

Clover Seed may now be sown on the wheat. This plant will thrive nearly all over the Southern States if care be taken with it. A liberal dressing of superphosphate with the seed will help both the wheat and the clover. If sown alone, a peck of seed to the acre will not be too much.

Grass and Hay.—There is no necessity for southern farmers to buy a bale of hay. Although, in many localities, timothy and other grasses common at the north will not thrive, yet blue grass and some of the hitherto despised native grasses, will grow almost everywhere, yielding both hay and pasture. Instead of fighting out the grass as heretofore, many southern farmers are encouraging it—or rather letting it alone—which is encouragement enough for the Bermuda and Crab grasses—with profit. The experience of the past year, in Georgia especially, proves that grass may be made more profitable than cotton acre for acre.

Stock.—Humanity, as well as interest, demands the best attention to live stock. To keep every animal well fed, clean and comfortable, is a profitable and a kindly act. A humane man should suffer to see cows standing in filth, and with their flanks covered with it. A cow or any other animal continually kept in such a condition is a disgrace to any man, and a direct injury to his pocket as well.

Winter Wheat.—Last season the bare ground, deeply frozen, was an injury to the wheat, while this season the deep snow gives occasion for fears. The farmer rarely escapes one or the other extreme, except by constant watchfulness. Now he must look to the outlets for water from his field, so that the ground may not be flooded when a thaw comes. If it is intended to top dress the wheat or rye, this should be postponed until it is probable that the manure would not be washed away with the melting snow. Such contingencies as this prove how much better it is to have the wheat crop manured before winter sets in, or before it is sown.

Spring Wheat.—In districts where spring wheat can be grown, it would be well to remember that this grain, at present, brings a comparatively high price. Where everything is favorable, as much land as possible should be prepared for it. A dressing of 150 pounds of nitrate of soda, upon a clean corn stubble, either fall plowed or plowed early in spring, would make a good preparation for this crop.

Manure.—The manure from the stables and sheds should be piled as it is hauled out. A square, compact heap, kept well built at the sides, and flat on the top, will retain sufficient heat to resist frost, and the manure will rot rapidly in the coldest weather. Fresh additions on the top will soon heat, and by and by the whole may be turned over and rebuilt, the outside portions being placed in the centre of the new heap. Managed in this way the manure will be in excellent condition for use in the spring. If free from long stalks or straw, the manure will be fine and well rotted.

Milk Cows.—Cows that are to come in early should be dried off in good time. It is not economy to milk cows as long as a few pints may be drained from them. The drain on the system in nourishing the calf is enough for the cow to bear. If the cow is a copious milker, care must be exercised in feeding, lest in the new flush of milk garget may occur. To avoid this, feed low; *give no corn meal* whatever, and it is safest to give nothing but hay and some roots. There need be no apprehension if a large heavy udder is not shown before calving. It will be the safer, and the flow of milk may easily be encouraged when the calf is a week or two old, and danger of inflammation is passed. Every farmer cannot have his cows fresh in the winter, nor can every dairyman or woman make winter butter of first quality, but those who can do these things are able to get double the profits from their cows that others do, and have their dairy work come at the season when there is little else to be done—a matter for smart farmers to think over.

The Card.—A pair of cards ought to be kept in every cow stable, and they should be frequently used. A clean, sleek hide is a credit to the owner and a comfort to the animals. We have carded bulls, cows, and calves every day in the winter, and occasionally in the summer, for many years, and never found our stock to be troubled with lice. Cattle that have been purchased have sometimes been found lousy, but after a few applications of the card, dipped in kerosene, the vermin disappeared. The carding, and the brushing afterwards, should be done before the milking. There will be no complaints then of specks in the milk. In place of the brush, a brisk rubbing with a handful of soft oat straw will give a good finish to a carding.

Horses.—Idle horses may be kept in a straw yard with an open shed for shelter. A few ears of corn, given daily, will keep them in good condition. Brood mares, at least, should have as much exercise as this. Horses kept in stables should be well curried and brushed. A sharp curry-comb is a nuisance in a stable, and makes many nervous horses fractious and irritable. The sharp teeth may easily be rubbed down with a file or a whetstone. To clean a curry-comb, dip it into a solution of common sal-soda, rinse it about a short time, and then wash it in hot water. When the coat begins to shed, a pint of linseed-cake meal may be given daily to each horse with benefit.

Fattening Cattle.—A change of food will be of great help in quickening the appetite of stall fed cattle. A pint of molasses, mixed with a feed of cut straw and meal, will be taken very readily. This may be given once a day, and one to two ounces of salt with an alternate feed. Roots, sliced and sprinkled with either cotton or linseed-cake meal, will be very healthful. A few apples will be useful between meals. A pound of meal stirred in the drinking water will help. By varying the food in this way one can hardly overfeed fattening stock so as to pall the appetite.

Sheep, feeding for the butcher, can profitably consume, according to the size, from one to two pounds of grain per day, with hay, straw, and 6 to 12 pounds of roots. It will not pay, as a rule, to keep fattening sheep to save the fleece after they are ripe for market. The value of the pelt always enters into the price given by the butcher, and to feed sheep two months to save the value of the pelt, and then find this deducted from the price of the sheep, is not a pleasing surprise. Fat sheep generally sell best this month or early in March.

Lambs.—Every lamb of the right kind now appearing, if within 300 miles of New York, may be made, by proper management, to be worth, three months hence, $8 or more in the market. The raising of early lambs for market is a growing and profitable business. To give all the details of their management would take too much space. They may be learned by studying Stewart's "Shepherd's Manual," in which this branch of sheep feeding is explained at length. The essentials to success are the right kind of sheep; to have lambs early, and to feed well until ready for market. Dry, warm quarters and good food for the ews are indispensable.

Store Sheep can be wintered very well on straw, fed twice a day, with some roots, a pound of hay, and a pint of grain between the morning and evening feeds. No grain or roots should be fed until the morning feed of straw has been eaten clean.

Salt.—A lump of rock salt kept in a shed or under cover, where the animals can lick it at will, is the safest way to give this necessary condiment—given to excess, it is hurtful, especially to pigs.

Pigs.—Dry, warm, well-ventilated, clean pens or yards are necessary for success in raising swine. Disease inevitably accompanies neglect in these things. There is no mystery about the diseases which destroy so many swine. An unhealthy sameness of food, all corn, or all whey, no roots; too much wet, damp and filth; perhaps too close inbreeding, all result in disease, which in time becomes constitutional. A beginning of a better way may be now made with the young pigs to be soon looked for. Provide the brood sows with warm, dry pens, with plenty of bedding of cut straw. Feed corn meal, bran and mangels, turnips or potatoes, and apportion the different kinds of food with regard to the condition of the sows.

Poultry.—Some of the hens that have been laying will brood this month. Provide a warm place for them, where they will be quiet and undisturbed. A sunny corner in a warm stable will do very well for the chicks next month if the fowls are of a hardy breed. These early chickens will make early market birds, and the pullets will lay early.

Seed.—Provide all seed that may be wanted, at once. Choose those kinds that have been carefully grown and free from weeds. Order corn, oats, clover, timothy, and other grass seeds and garden seeds at once, to be on hand when wanted.

Work in the Horticultural Departments.

In January and February, when the majority of our readers can do but little out-door work, it has been our custom to devote these notes to general matters, rather than to details of operations. Last month the Orchard and Fruit Garden received special attention, general plans were discussed, and selections of varieties were given. This month we devote our notes mainly to the Vegetable or Kitchen Garden, and refer to last month for information on fruit culture. If our correspondents will consult the January and February notes before sending us questions about fruit and vegetable culture, they will often find their queries already answered, for the notes are written with the wants of many correspondents in mind.

While we devote our space largely to the Kitchen Garden, the Orchard and Fruit Garden are not to be neglected. In the warmer States planting will be in season, and general spring work fairly open. In northern localities there are often mild spells in February when pruning can be done, and the damp foggy weather so frequent now is a most favorable season for washing and scarping the trunks of neglected trees. Our January remarks in regard to selecting and purchasing, are all the more important now. As spring approaches, every week's delay becomes the more impolitic and dangerous.

Kitchen and Market Garden.

As the heading "Kitchen Garden" has led some to suppose that the notes only applied to the small patch devoted to supplying the table, we adopt a more comprehensive and discriptive title.

Every Farmer within a few hours drive of a market — and a manufacturing village is often a better one than even the famed Washington Market in New York — will find it to his interest to provide for the wants of that market. While he may not care to become a market-gardener, and devote himself to numerous small and often perishable crops, he can at least adopt

Farm Gardening, and greatly to his profit. Roots, such as beets, carrots, parsnips, turnips, etc., cabbages, squashes and celery are among the easily raised crops, always in demand, and which need not be hurried to market. Tomatoes, sweet corn, melons and spinach are perishable, but often profitable. A farmer who is near a market for such things can not afford to go on raising poor crops of Indian corn, rye and buck-wheat.

Books. — No branch of horticulture is better provided with literature than this. "Gardening for Profit" by Peter Henderson, is a useful guide to those who grow vegetables for home use or for sale. "Money in the Garden" by P. T. Quinn is another standard work, and "Farm-gardening and Seed-growing" by J. Brill, is also a most useful work. It will *pay every cultivator* to have all three of these works, as each has its peculiar excellencies, and gives methods and experiences different from the others.

Forwarding Plants. — In the great majority of country gardens the natural "seed time and harvest" are accepted. When it comes time to "make garden" the ground is prepared, seeds are sown and the job done up. As a consequence there is a great supply of vegetables for a month or two and a dearth at other times. A little trouble will prolong the season at both ends. By sowing under glass, the seeds of various tender vegetables, the plants will be ready to set in the open ground at the time seeds can be sown there, thus making a gain of 6 or more weeks, a matter of great importance, especially if the crop is to be sold. This forwarding of the plants is generally accomplished by the use of

A Hot Bed. — We would, if it were practicable, avoid the repetition of matters that have been more than once described, but as our notes are made to meet the wants of our readers, we are obliged to sometimes repeat. A dozen letters or more are at hand asking for directions to make a hot-bed. As strange as it may seem to those accustomed to them, hot-beds are looked upon by many as something difficult to make and to manage.

What is a Hot-Bed? — It is essentially a box covered with glass, containing earth in which to sow seeds, and is heated to the proper temperature (usually) by means of fermenting manure. It may be small, for the wants of a family garden, or large for a market garden, or where plants, such as lettuce, are entirely grown in them, the beds may cover acres of surface. Small hot-beds of less than three, or perhaps two sashes, are not desirable and where but very few plants are needed, they are more readily raised in window boxes, described below.

The Heating Material is generally stable-manure. Every one knows that fresh manure, thrown into a pile, will become hot, often so hot as to burn that at the center of the pile. Manure for the hot-bed must be so treated as to produce a sufficient heat, and at the same time to continue it as long as possible. Manure, long and short together, is placed in a conical pile, and as soon as the escape of steam, or a stick thrust into the center of the heap shows to the hand that the heat is rising, the pile should be turned, this is done by forming it into a new pile by the side of the old one. If the manure appears dry, water it. The use of leaves with the manure modifies the violence of the heat, and at the same time prolongs it. One half its bulk of leaves may be added to ordinary manure, or if it is very free from litter, an equal bulk may be used. The leaves may be evenly mixed with the manure at the first turning, or added when the bed is made up. When the manure has been turned about three times, it is ready for use.

The Sashes. — In cities, or places where there are sash-factories, hot-bed sashes may be bought ready made, either glazed or unglazed. They cost glazed—from $2.50 to $4 each, according to material and make. — They are 3x6 feet, the sides and ends of 1½ inch pine; 4 bars run lengthwise (there are no cross bars) and rabbeted to receive the glass. A sash of this kind will require 45 lights of 6x8 glass. This is bedded in putty, each pane lapping on the one below it from ¼ to ½ inch, and fastened by tins. No putty is used on top of the glass, but one or more coats of white-lead paint are given.

The Frame. — There are two ways of making a hot-bed. One is, to place the manure in a pit; the other, to build it up in a pile and set the frame upon it, the first being common in market gardens and the other for small hot-beds. In making a pit the earth is excavated 2½ feet deep, 6 feet wide and of a length according to the number of sashes. The pits are lined with rough boards, nailed to posts, and extends above the surface 3 or 4 inches in front and a foot at the rear. Sliders or strips 2 inches wide, extend from front to rear, where every two sashes come together, these have their ends let into the boards of the frame by a dove-tail joint and help to keep the frame firm. A narrow strip is nailed in the middle of every slider, to make a guide to hold the sash in place when sliding it up or down. The other style of frame is usually made to fit three sashes;

it consists of a front piece 15 inches high, a back 24 inches high and two end pieces with a regular slope from front to rear. This may be knocked together out of rough boards, or may be made with care, so put together with hooks or clamps, that it may be taken apart and stored away when not in use. This has sliders running from front to rear.

Making the Beds.—In case a pit is used, of course the place selected must be one where no water will stand in it. The sashes should slope to the south or south-east. If there is no shelter at the north or north-west, such as a fence or building, a temporary screen of brush or boards may be put up. The manure being ready, place litter or leaves on the bottom of the pit to the depth of 6 inches, then put on a layer of manure, taking care to distribute long and short evenly, and beat it down with the back of the fork. When the pit is full, tramp it down rather firmly with the feet, to make a level surface; if any soft places are found, add more manure to make all uniform. Then put on the earth. For the hot-bed with the manure above ground, put down four stakes to mark the corners of the pile, which should be a foot larger than the frame at each side and end. Put down a layer of any coarse litter or old pea-brush, and build up the pile gradually, being guided by the corner stakes. The manure should be laid on evenly, a forkful at a time, the edges of the bed kept firm and even and the manure well beaten down as the work goes on. The pile should be 3 feet high, and so well made that it will settle all alike. The loose fine manure that is left is to be carefully shoveled up and spread on top of the pile. The frame is put on and the earth added. Sometimes a compromise between these two methods is adopted. Instead of making the bed on the ground, an excavation two feet deep and two feet longer and wider than the frame is made, but not boarded up, and the pile built up in this. The more solidly the manure is packed, the slower and more long-continued will be the heat; where there is a large share of litter or leaves, there is little danger of making it too compact, but either extreme must be avoided.

The Earth should have been prepared last autumn and stored under shelter, ready for use. It should be rich, fine, and open. Good garden soil, with thoroughly rotted manure, and enough sand to keep it from becoming close, make the best. If this has not been prepared, the best soil obtainable, with a handful of fine bone or guano to each sash, thoroughly mixed with it, and turned each day for a week, will answer. The depth of soil will depend upon the use to be made of the beds. If the seeds are sown directly in the soil, six inches will be required. If boxes or "flats" are to be used, then the rich soil is put into these; any common soil, to the depth of 2 or 3 inches, on which to set the boxes may be put on the manure.

Boxes or Flats are made from soap boxes or other empty cases to be had of the grocer. One box will make two, or three; they are simply shallow boxes 2 inches deep, with a bottom securely nailed on. Seeds are sown in these, young plants transplanted to them, and plants are often sold in them.

When to make the Hot-Bed.—Generally it is safe to start the bed six weeks in advance of the time that plants may be put into the open ground. Some seeds need more heat than others; some plants will be sooner ready than others, and a few, such as egg plants, peppers, etc., should not go out until quite warm weather—hence to meet their requirements it is well to sub-divide the hot-bed, by cross-wise partitions, that each may be managed differently.

Sowing the seeds.—The bed being made and the sash put on, a strong heat will soon arise. A thermometer placed in the soil will show probably over 100°. Wait until the violent heat passes off, and when the mercury has fallen to 90° or 80°, the seeds may be sown in rows 4 inches apart, from front to rear. If boxes are used, the seeds may be sown in the work-shop or other convenient place and set in the beds when the violent heat is over.

Watering and other care, must be given as to seeds elsewhere. Use a watering-pot with a very fine rose (or sprinkler), and use water with the chill removed. Pick out weeds as they appear. The earth between the rows should be stirred now and then with a small pointed stick to keep it open.

Airing, shading and covering.—A hot-bed requires daily care. An hour or two of neglect may ruin its contents. In the morning, the upper ends of the sashes must be lifted, more or less, according to the outer temperature, for the escape of the superfluous heat and the admission of fresh air. They must be closed before the bed becomes too cool, usually by 3 or 4 o'clock in the afternoon. The nearer the temperature within the bed can be kept at 75° the better. If shading is needed, as with recently transplanted plants, and old sheet may be thrown over the glass. Cool nights there will be great loss of heat and the glass must be covered either with straw mats, board shutters, rugs, or other protection.

Other Matters.—A long wedge-shaped piece of wood will be needed to each sash; by putting this under the upper edge of each, the sash may be lifted from one to three inches. Straw-mats are the best covering, and are handy for various uses. There are several ways of making them, but none equal to that described in the *American Agriculturist* in April and May, 1875. The account is quite too long to repeat, but it will pay any one who uses straw-mats to send for those two numbers. Some gardeners use, instead of mats, shutters the size of the sashes, made of half-inch stuff, and well secured with cleats. If very cold weather, it will be well to bank up the higher side and ends of the bed—if made in a pit, with manure. If this is not at hand, leaves or litter will be better than nothing. Look out for sudden wind squalls, when the sashes are tilted, else there will be a scattering of sashes and breaking of glass.

Cold-Frames are precisely like hot-beds without manure, and set upon the surface of the ground; they should have the sides and ends banked up with earth or litter. They will be useful later to receive and harden off plants that have been raised in the hot-bed. Seeds may be sown in them, and gain considerably over those in the open ground. For these all the appliances, especially mats or shutters, are needed that are required with hot-beds. Set the cold frame to catch the sun's rays; have it well banked up. Cover the sashes in the afternoon, and open them to the sun in the morning. By this treatment the soil within will soon get warm, and seeds may be sown—the treatment of the plants in all respects being the same as if they were in a hot-bed. Flats may be used in them also.

Sowing in Window Boxes.—Those who need only a few plants can raise them without the trouble of a hot-bed or cold-frame in boxes set in a kitchen window. The flats already described may be used, or any other box will answer. We prefer the kitchen window, though any other sunny window will do, because the atmosphere is generally moister, and from frequent opening of the doors the air is better. Watering must be attended to; when the plants are up, turn the boxes every day, to keep them from growing to one side; when they have made two rough leaves (besides the seed-leaves) transplant to other boxes, giving room according to the size of the plant. As the weather becomes warmer, the boxes may be set in the sun outdoors in the warm portion of the day; this will harden off the plants and make them strong.

Seeds.—With every vegetable there are a few varieties that experience has shown to be better than others. The *best* usually cost no more than the poor kinds. We will point out the kinds we have found most desirable.

Novelties are offered every year. Those who can afford the time and the seeds, will find it interesting to make trials of new things, but no one, whether for use or for sale, should depend for his whole crop upon any untested novelty, especially if foreign.

Where and How to get Seeds.—Please do not write to ask us who sells the best seeds. We do not allow any seedsman to advertise unless we believe him to be honest and reliable, hence we do not recommend one in preference to another. Send for catalogues and make your selections early. It makes no difference where one lives, the mail places all in this respect on an equality.

VARIETIES.

Asparagus.—Buy roots and save a year, or raise by sowing Conover's Colossal in open ground early.

Beans.—Bush: Early Valentine, Early Fejee, Dwarf, and Black Wax. Pole: Large Lima, Case-Knife, for shelling, Black Wax, and Horticultural (or Cranberry) for snaps.

Beets.—Early: Egyptian, Bassano. Late: Long Smooth Blood. Swiss Chard, or Sea Kale Beet is useless for root, but the leaves are fine Greens.

Borecole or Kale.—Siberian or German Greens.

Brocoli.—Purple Cape, Walcheren.

Cabbages.—Early: Jersey Wakefield, Early York. Medium: Summer Drumhead, Winningstadt. Winter: Large Late Drumhead, Flat Dutch, Marblehead Mammoth, Savoy.

Carrot.—Early Horn and Long Orange.

Cauliflower.—Early: Erfurt, Early Paris. Late: Autumn Giant.

Celery.—Dwarf White Solid, Boston Market, Dwarf Crimson. Turnip-rooted or Celeriac is used for soups and salads.

Corn.—Early: Early Minnesota, Early Narragansett. Second and main crop: Triumph, Moore's Concord, Stowell's Evergreen.

Cucumber.—Early: Early Russian, Green Cluster. Main crop: White Spine. Pickles: Green Prolific, Long Green Prickly.

Egg Plant.—Long Purple, New York Improved, Black Pekin.

Endive.—Green Curled.

Garlic.—Always raised from sets.

Kohl Rabi, or Turnip-rooted Cabbage, White Vienna.

Leek.—Large Flag, Mussellburg.

Lettuce.—Earliest under glass: Boston Market. Earliest open ground: Curled Simpson. Later: Hanson, Large India.

Martynia for pickles—but one sort.

Melon, Musk.—White Japan, Ward's Nectar, Green Citron, Cassaba.

Melon, Water.—Phinney, Mountain Sweet, Ice Cream, Black Spanish.

Nasturtium, for pickles.—Tall.

Onions.—South of New York onions rarely succeed from spring sown seeds, and "sets" must be planted; they are sold at the seed stores. For seed. Early: The Queen. Main crop: Wethersfield Red, Yellow Danvers, White Globe.

Okra.—Long Green.

Parsnip.—Cup or Hollow Crown.

Parsley.—Double Curled, Fern-leaved.

Peas.—Earliest: Carter's First Crop, or Dan'l O'Rourke; Laxton's Alpha is but a few days later, and vastly better than any very early pea. Medium: McLean's Advancer. General crop: Champion of England, to which no pea is superior. Dwarfs are convenient to occupy odd places. Little Gem and Blue Peter are the best of these.

Peppers.—Sweet Mountain, for stuffed pickles; Squash for pickles; Red Chili for pepper-sauce.

Potatoes.—Only the earliest varieties should take up the room of the garden, such as the Alpha, Early Vermont, Thorburn's Paragon, or Early Rose.

Radish.—Scarlet Turnip, Olive-shaped, and French Breakfast, take up but little room, and may be grown in spare places in hot-bed or frame, or in open ground with early beets and carrots to mark the rows; the best long is Long Scarlet Short-top; California and Rose-colored China are best winter sorts, sown late the same as round turnips.

Salsify and Scorzonera, the latter called Black Salsify, are both excellent, and where known will always be sown. But one kind of each.

Spinach.—Round-leaf for spring and fall; the New Zealand for midsummer.

Squash.—Early: Summer Crook-neck. Medium: Boston Marrow. Late: Hubbard, Marblehead, Butman, Yokohama.

Tomato.—Early: Conqueror. Main crop: Trophy. See catalogues for fancy sorts.

Turnip.—Earliest and latest sowings: Red-top Strap-leaf. Winter: Long White French, Yellow Stone, Golden Ball.

Odds and Ends.—Sage, Sweet Marjoram, Thyme, Summer Savory, Sweet Basil, Tarragon (roots), Pepper grass or Cress, Strawberry Tomato (preserves.)

Sow in Hot-Bed, Cold-Frame or Window Boxes, Broccoli, Early Cabbage, Cauliflowers, Lettuce, Pepper, Tomato and Egg Plant; Cucumbers, Bush Squash and Melons may be sown in small pots, the ball of earth to be turned out into the open ground; sow several seeds in each, and leave but one or two plants to grow. Pieces of sod, 3 inches square will answer instead of pots; these are placed grass-side down and the seeds sown in the earth side; the sod containing the roots is set out.

Flower Garden and Lawn.

The main work out of doors in this department during February, will be to keep the snow shoveled away from the lower branches of evergreen shrubs and trees, else they are likely to be broken by the alternate melting and freezing. During heavy storms snow will often accumulate to such an extent as to break the large branches; when it is possible to jar off the snow it should be done.

Greenhouse and Window Plants.

For general care we must refer to last month's notes.

Propagation.—Those who grow plants for sale are now busy in increasing their stock. Those who need plants for bedding out should be preparing them. If a regular propagating house is not provided, a frame covered with a sash, on the warmest part of the greenhouse bench will answer; this should contain two or three inches of clean sand, free from salt; small cuttings of tender shoots, root more rapidly than older ones. As soon as roots form, pot off into small pots of rich soil.

Pots should be in readiness, and if old ones are used, have them carefully washed both inside or out.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Jan. 12th, 1877, and for the corresponding month last year: and also for the year ending Dec. 31, 1876:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	207,000	791,000	904,000	92,000	227,000	517,000
24 d's *last* m'th	335,000	2,267,800	2,358,500	126,000	560,000	1,050,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	294,000	2,338,000	1,469,000	50,500	239,000	601,000
24 d's *last* m'th	381,000	2,414,000	2,387,000	97,000	312,000	923,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 76-7..	267,000	791,000	904,000	92,000	227,000	517,000
25 days 75-6..	332,000	735,000	1,017,000	39,000	231,000	593,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 76-7..	294,000	2,338,000	1,469,000	50,500	239,000	601,000
25 days 75-6..	393,000	2,814,000	1,871,000	47,000	284,000	1,918,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Nov. 8, 1876..	2,048,233	3,206,003	294,381	478,441	1,002,891	495,640
Oct. 9, 1876..	1,931,892	1,195,387	158,305	91,245	825,187	421,751
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Receipts of Breadstuffs in New York in each of the last eight years:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.
1876....	3,852,752	26,866,221	26,657,669	1,611,912	6,746,198	12,140,676
1875....	3,940,272	34,214,736	22,485,707	301,654	4,707,346	10,636,077
1874....	4,017,207	41,817,215	29,329,000	592,114	2,776,025	10,792,919
1873....	3,546,068	38,559,870	24,559,345	992,447	2,448,526	11,235,420
1872....	3,030,771	16,229,418	25,292,156	491,563	5,117,351	12,486,348
1831....	3,649,045	26,518,360	27,108,156	1,055,621	3,869,123	12,546,966
1870....	4,143,993	24,083,742	9,143,478	550,169	5,020,718	9,626,606
1869....	3,535,716	23,813,652	11,666,784	357,803	3,007,958	8,747,322

5. *Exports from New York, Jan. 1 to Dec. 31.*

	Flour.	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
1876....	1,894,158	24,227,852	15,991,817	1,337,164	88,132	619,554
1875....	1,954,180	26,192,693	12,938,740	206,898	1,505	138,752
1874....	2,177,608	34,791,249	19,000,995	641,661	3,560	122,528
1873....	1,655,331	27,801,829	15,587,527	1,009,148	19,376	49,710
1872....	1,179,050	13,144,956	27,864,000	668,547	22,656	31,480
1871....	1,659,755	21,968,643	13,046,570	525,772	98,745	47,310
1870 ...	1,950,234	18,446,035	487,792	92,431	——	28,986
1869....	1,582,211	18,240,586	1,637,586	142,542	——	49,393

6. *Comparative Stock of Flour in New York, Jan. 1:*

	1874.	**1875.**	**1876.**	**1877.**
Flour, bbls...............	269,751	277,439	449,510	276,000
Wheat, bushels.........	1,258,600	4,600,711	6,371,296	4,191,341
Corn, bushels	1,272,500	1,146,408	591,690	3,629,058
Rye, bushels............	14,630	114,899	115,607	390,891
Barley, bushels........	194,400	561,951	513,596	1,858,627
Oats, bushels......	471,600	1,283,464	1,321,587	1,391,149
Malt, bushels............	26,530	182,775	381,471	656,088
Peas, bushels	12,470	15,139	6,650	13,512

7. *Exports from New York, Jan. 1, to Jan. 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1877....	39,420	466,708	42,295	7,984	——	4,285	1,606
1876....	71,718	521,558	453,833	2,840	——	6,183	32,093
1875....	67,408	732,422	480,372	——	——	4,719	5,095

CURRENT WHOLESALE PRICES.

	Dec. 12.	Jan. 12.
PRICE OF GOLD	**107 1-4**	**106**
FLOUR—Super to Extra State	$5 00 @ 5 90	$5 25 @ 6 25
Super to Extra Southern....	5 00 @ 8 50	5 25 @ 8 75
Extra Western................	5 50 @ 9 75	5 75 @10 50
Extra Genesee................	5 85 @ 6 85	6 25 @ 7 15
Superfine Western...........	5 00 @ 5 50	5 25 @ 5 75
RYE FLOUR.....................	3 00 @ 5 20	3 00 @ 5 20
CORN-MEAL....................	2 70 @ 3 50	2 65 @ 3 60
BUCKWHEAT FLOUR, ℘ 100 ℔s	3 35 @ 3 75	3 65 @ 4 00
WHEAT—All kinds of White.	1 25 @ 1 50	1 35 @ 1 57½
All kinds of Red and Amber.	1 00 @ 1 50	1 05 @ 1 55
CORN—Yellow	56 @ 61	57 @ 63
Mixed	55 @ 60	57½@ 64
White............................	50 @ 59	58 @ 63
OATS—Western	33½@ 45	40½@ 50
State	46 @ 50	47 @ 53
RYE	80 @ 95	83 @ 95
BARLEY	68 @ 1 15	65 @ 1 12½
BUCKWHEAT....................	83 @ 85	92½@ 95
BARLEY MALT..................	75 @ 1 25	70 @ 1 30
HAY—Bale, ℘ 100 ℔s..........	50 @ 90	55 @ 1 00
STRAW, ℘ 100 ℔s...............	45 @ 90	55 @ 95
COTTON—Middlings, ℘ ℔....	12⅛@ 12⅞	13 @ 13¼
HOPS—Crop of 1876, ℘ ℔	15 @ 33	12 @ 30
" old, ℘ ℔.............	10 @ 20	10 @ 17
FEATHERS—Live Geese, ℘ ℔.	45 @ 58	45 @ 58
SEED—Clover, ℘ ℔	15¼@ 16	15 @ 16¾
Timothy, ℘ bushel...........	1 90 @ 1 95	— @ 1 90
Flax, ℘ bushel.............	1 60 @ 1 65	1 60 @ 1 70
SUGAR—Refi'g & Grocery ℘ ℔	8¾@ 11⅛	8 @ 11
MOLASSES, Cuba, ℘ gal.50 test	38 @ 40	Nominal.
New Orleans, new crop, ℘ gal	50 @ 60	40 @ 60
COFFEE—Rio (Gold)...........	16½@ 20	19 @ 22¼
TOBACCO, Kentucky, &c., ℘ ℔.	6 @ 18	5 @ 18
Seed Leaf, ℘ ℔.........	4½@ 50	4½@ 50
WOOL—Domestic Fleece, ℘ ℔	30 @ 50	28 @ 50
Domestic, pulled, ℘ ℔........	22 @ 40	22 @ 40
California, spring clip,........	15 @ 28	15 @ 30
California fall clip............	12 @ 22	12 @ 23
TALLOW, ℘ ℔	8 @ 8⅜	8 @ 8½
OIL-CAKE—℘ ton	37 00 @37 50	36 50 @ —
PORK—Mess, ℘ barrel........	16 75 @16 87½	17 25 @18 25
Prime, ℘ barrel	— @14 00	14 00 @14 25
BEEF—Plain mess.........	10 00 @11 50	10 50 @11 50
LARD, in trcs. & bbls, ℘ 100 ℔	10 00 @10 32½	10 75 @11 50
BUTTER—State, ℘ ℔...........	22 @ 37	22 @ 37
Western, poor to fancy, ℘ ℔.	16 @ 36	16 @ 37
CHEESE..	6 @ 15	6 @ 15
BEANS—℘ bushel........	1 50 @ 2 40	1 85 @ 3 75
PEAS—Canada, in bond, ℘ bu	90 @ 93	— @ 90
EGGS—Fresh, ℘ dozen	28 @ 33	32 @ 40
POULTRY—Fowls..............	8 @ 11	9 @ 16
Turkeys—℘ ℔..................	9 @ 16	9 @ 16
Geese, ℘ pair......	1 25 @ 2 00	1 25 @ 2 00
Geese, ℘ ℔........................	7 @ 13	7 @ 13
Ducks, ℘ pair......................	50 @ 1 00	55 @ 1 00
Roosters, ℘ ℔.....................	6 @ 8	7 @ 8
Chickens, dry pick'd ℔........	9 @ 13	13 @ 17
GROUSE, ℘ pair................	50 @ 90	65 @ 80
PARTRIDGE, ℘ doz	40 @ 90	55 @ 62½
DUCKS, Wild, ℘ pair..........	25 @ 1 50	40 @ 2 00
QUAIL, ℘ dozen................	1 25 @ 1 50	75 @ 1 37½
VENISON, ℘ ℔.........	8 @ 18	8 @ 14
RABBITS, ℘ pair...............	30 @ 35	18 @ 25
HARES, ℘ pair.................	40 @ 60	25 @ 40
TURNIPS ℘ bbl..................	75 @ —	75 @ 1 00
CABBAGES—℘ 100	3 00 @ 7 00	4 00 @ 9 00
ONIONS—℘ bbl..................	1 00 @ 2 75	1 50 @ 4 50
POTATOES—℘ bbl...............	2 50 @ 3 37½	2 25 @ 3 75
SWEET POTATOES—℘ bbl.....	3 00 @ 4 00	4 25 @ 5 00
CAULIFLOWER, ℘ bbl..........	1 00 @ 2 50	— @ —
BROOM-CORN	3½@ 8	3½@ 8
GREEN PEAS, ℘ bush.........	1 40 @ 1 45	1 25 @ 1 40
CRANBERRIES—℘ bbl..........	7 00 @ 9 50	7 00 @ 9 00
" ℘ crate...............	2 75 @ 3 00	2 75 @ 3 00
APPLES—℘ barrel.............	75 @ 2 00	1 00 @ 2 00
SQUASH, ℘ bbl	1 00 @ 1 75	— @ —
GRAPES, ℘ ℔...	4 @ 11	— @ —
CIDER, ℘ gal.....................	7 @ 9	7 @ 10

Gold has been up to 107¾, and down to 105⅞, closing Jan. 12, at 106, as against 107¼ on Dec. 12; and 112⅞ on the 13th of Jan, 1876... Stormy weather, fluctuating foreign markets as reported by cable, serious impediments from ice and snow to the transportation of produce, depression in gold, and irregularity in foreign exchange, have all worked against free movements in Breadstuffs, which, however, under much lighter offerings, have been generally held with much more confidence, particularly Flour, Wheat, Oats, and lines or boat loads of Rye, many receivers asking prices toward the close above the views of buyers, thus also impeding operations. The export inquiry has been moderate, but on the increase since the opening of the new year, favored in part by the recent decline in ocean freights, which, for the month, has been quite important, on both berth and charter contracts. The very latest dealings in Flour indicated rather less firmness; in Wheat and Oats a strong range of values; and in Corn, Rye, and Barley, comparative steadiness. Of Wheat, the favorite grade with shippers at the close was No. 2 Milwaukee Spring, of the new crop, which tended upward in price, on a very limited offering....Provisions have been active throughout the month, with wide and frequent fluctuations in Mess Pork and Western Steam Lard, due, in good part, to speculative manipulations here and at Chicago ....Cotton has been more active and quoted higher.... Wool has been moderately sought after, but, in view of the reduced stock, has been held with decided confidence.... Hops have been selling more freely, chiefly for shipment to the London market, but at variable prices, closing with renewed firmness.....Seeds have been generally slow of sale, and toward the close quoted rather weak in price.....Tobacco has been moderately sought after at about former quotations....Hay and Straw strong as to values, but not active.....Ocean Grain and General Cargo Freight interests have been depressed, with rates quoted lower, without leading to much show of animation.....Grain rates by steam to Liverpool closed on the 12th of Jan. at 7*d*; to Glasgow at 6½*d*; to London at 7½@8*d*; to Liverpool, by sail, at 6½@7*d*; London, by sail, at 7@7½*d*. per bushel. Provisions by steam to Liverpool, 40*s*.@50*s*. per ton; Cotton at $^9/_{32}$@$^5/_{16}$*d*. ℘ ℔. Grain, by sail, for Cork and orders, at 5*s*.9*d*.@6*s*.6*d*. per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*	*Tot'l.*
Dec. 18..............	8,358	143	940	24,227	35,124	68,792
Dec. 28..............	6,413	39	538	16,843	28,188	52,021
Jan. 1..............	7,514	73	664	10,248	17,641	36,140
Jan. 8..............	8,999	84	775	25,231	25,335	60,424
Total for 4 Weeks ..	31,284	339	2,917	76,549	106,388	217,377
do. *for prev. 4 Weeks*	40,139	428	6,421	109,304	142,335	298,627

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week........	7,821	85	729	19,137	26,597
do. do. *last Month*...	10,034	107	1,605	27,326	35,583
do. do. *prev's Month*...	9,735	73	2,052	30,732	29,407

In reviewing the live stock trade for the year past, the most important feature is the rise and growth of the foreign export of beef and mutton. The experiment of shipping live animals resulted in failure, but that of exporting dressed carcasses has so far promised to result successfully. An unfortunate reverse in the market, by which a whole shipment was sacrificed at 2 cents a pound, making a loss of $20,000, has led the capitalists engaged in the business to become their own retailers, and open shops for the disposal of the meat. The final result has yet to be seen. 22,500 head in all have been shipped, and the weekly consignments now reach 1,000 head and upwards. Notwithstanding the withdrawal of this large quantity, the receipts of beeves have increased since last year. The total arrivals for 1876, have been as follows:

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Hogs.*
Totals, 1876... ...	477,276	3,976	125,594	1,247,820	1,282,171
Average..........	9,005	75	2,370	23,544	24,192
Totals, 1875.......	453,060	5,034	117,580	1,228,530	1,388,541
Average..........	8,743	97	2,261	23,626	26,703
Totals, 1870.......	356,026	5,050	116,457	1,463,878	889,625
Totals, 1860	226,747	7,154	40,162	514,191	319,628

Prices for the past year have averaged 1¼c. ℘ ℔. less than in 1875, and the business on the whole has been satisfactory to none interested. The fluctuations have been from 8½@10½, the closing price being 10¼c., against the opening price of 10c.

Beeves.—The market, under the help of retarded trains and lessened receipts, many fine holiday cattle, and a good demand, has ruled strong with higher prices through the month. A much greater advance would have been made, were it not for the large quantity of game and pork products, such as spare-ribs, tenderloins, etc., of which fully 1,500,000 pounds are thrown upon the market weekly. All this taking the place of beef in consumption, is equivalent to a reduced demand of at least 1,000 beeves weekly. The foreign trade, now taking about 1,000 head weekly, helps to sustain the market. At the close prices were a little weak, extra cattle selling at 10¾@11¼c. ℘ ℔., estimating 58℔s. ℘ cwt. Good natives of 56 ℔s. ℘ cwt., sold at 9½@10c., and Texans and Colorado cattle of 55 ℔s. ℘ cwt., at 7¾@8¼c. ℘ ℔.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Dec. 18...........	9 @11 c.	7½@12½c.	9⅜c.
Dec. 25...........	8½@12 c.	9¼@11¼c.	10 c.
Jan. 1...........	8½@11¾c.	9½@10¾c.	10 c.
Jan. 8...........	7¾@11½c.	9½@10½c.	9⅞c.

Cows have been in poor demand, and the market has been dull and slow through the month. Prices are ruling from $45 to $70 each; lots sold at averages of $60 and $65 ℘ head....**Calves.**—A poor demand for this stock has been met with a small supply, and prices have not suffered to any extent. Fat veals are worth 9½@10c. ℘ ℔.; ordinary calves bring 4@6½c., and hog dressed sell at 11@12c. for prime, and 12½ for extra fat ones....**Sheep.**—Free arrivals have weakened the market to some extent, but no actual decline can be noted. The closing rates were 4¼c. ℘ ℔., live weight, for thin sheep, 5¼@5½ for medium, and 7@7½c. for fat stock....**Swine.**—Irregular arrivals have caused a fluctuating market, prices having advanced and declined fully ¾c. ℘ ℔. Prices ruled at the close at 8@8½c. ℘ ℔. for city dressed, and 7½ for Western. Live hogs sold at 6⅝@6¾c. ℘ ℔., for 200 to 220 ℔s.

Prices of Feed.

Bran, per ton....................................	$18.00@$20.00
Middlings, per ton................................	19.00@ 21.00
Ground Feed, per ton............................	15.00@ 21.00
Linseed-oil-cake, western, per ton...............	41.00@ 47.00
Cotton-seed-cake, per ton........................	25.50@ 40.00
Chandler's Scraps, per ℔.........................	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℘ ton..		$56.50
do. do. guaranteed, ℘ ton		56.00
do do. rectified, per ton		61.50
Mapes' Nitrogenized Superphosphate, per ton...	40.00@	50.00
" Plain Superphosphate (mineral), per ton	30.00@	35.00
" Bone Superphosphate, per ton...........	40.00@	45.00
" Prepared Fish Guano, per ton...........	35.00@	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..		40.00
" " Dry ground Fish Guano, ton		45.00
" " Pine Island Guano, per ton.		45.00
Stockbridge Corn Fertilizer.........................		22.00
" Potato "		12.00
" Tobacco "		60.00
Fish Guano (crude in barrels), per ton..........		18.00
Bone Flour, per ton................................	40.00@	45.00
Rawbones Ground (pure), per ton................	33.00@	40.00
German Potash Salts; (25@35 per cent), per ton.	25.00@	30.00
Gypsum, Nova Scotia, ground, per ton...........	8.00@	9.00
Wood Ashes, per bushel....	16 c.@	18 c.
Nitrate of Potash (95 per cent.), per lb.	9 c.@	9½c.
Sulphate of Potash (80 per cent) per lb..........	3½c.@	4 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@	3¼c.
Nitrate of Soda, per lb...............	4½c.@	5 c.
Sulphate of Ammonia (25 per cent.), per lb....	5 c.@	5½c.
Dried Blood or Dried Meat per unit of ammonia.	$3.00@	$ 4.0

Change in Subscription Terms.

Though, in a dozen years past, no change has been made in the nominal subscription terms of the *American Agriculturist*, except to add the postage when prepaid here, yet the price has been really *greatly lessened* by the additional quantity and quality, for the same price. Those giving special attention to such matters must have seen a large increase required in the amount expended for engravings, for quality of paper, and printing (and cover), for gathering and preparing information, etc. Any one making a comparison of this journal with most similar publications, must have noted the attention given to securing the best writers of the country, to sifting and condensing articles, etc. It costs far more to sift out and reject, to investigate new plants, implements, etc., than it would to send to the printer a mass of ill-prepared, uncondensed, floating material, with extracts from other journals, good, bad, and indifferent. Very many thousands of dollars are devoted to artists, designers and engravers. *Good* engravings convey, in small space, directly to the eye and mind, much information, that would require many columns of unsatisfactory descriptive words. Finely cut, original engravings, in the careful engraving and printing required, are far more expensive than the ordinary coarse "ink daubs," and they are worth far more in being pleasing to the eye, as well as in cultivating the taste. The printed matter of this paper costs for gathering and preparing, *before it goes to the printer*, over $20,000 a year, the benefit of which is enjoyed by every reader. This is a larger sum than is expended upon most of the $3 and $4 Magazines. The subscribers are not charged with or asked to pay the bare cost of preparing and supplying the paper, but a considerable part of this is paid by advertisers. The Publishers would gladly furnish the paper even lower if possible, to promote its still wider diffusion. In large clubs it now nets only $1 a year, as 10 cents is paid to the P. O. Department on every subscription. The single rate $1.60 (that is $1.50 and postage) is *very low* when quality and expense are taken into account. (The paper is strong, sized and calendered, almost equal in quality and finish to good writing paper). Reductions to clubs are made on the wholesale principle, and because it costs less to send to a club.

On and after Feb. 5th. 1877, the subscription terms of the *American Agriculturist*, payable in advance, will be:

1 copy, 1 year, sent post-paid	$1.60 each.
2 copies, " " "	$3.00, or $1.50 each.
3 " " " "	$4.20, or $1.40 each.
4 " " " "	$5.20, or $1.30 each.
5 to 9 copies " "	$1.25 each.
10 to 19 copies " "	$1.20 each.
20 copies and upward "	$1.10 each.

(When delivered in N. Y. City, through P. O., 14 cents extra on each of the above rates.)

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The Postage Law.**—The present postal law **requires pre-payment of postage by the publishers.** Each subscriber must therefore remit, in addition to the regular rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-five are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last twenty volumes (16 to 35) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

CLUBS—Increasing: Advantages: Lower terms are given to clubs of four or more subscribers, partly because it costs less to mail in packages, with only name slips on each paper; and partly to encourage getting up large lists. We do not object to a person's adding names to his club from other post-offices, because such additions usually become centers of other clubs....A Club can at any time be increased by the addition of other names, if these start with the same date as the others....Any one having sent a small club at one price, may raise the club to a large figure, and lower rate for all. Thus: one having sent 4 names at $5.20, may send 6 names more for $6.80, making $12 for the whole 10, including postage. And so for other club rates. The Terms are: Single subscriptions $1.60 each; two names $1.50 each; three names $1.40 each; ten to nineteen names $1.20 each; twenty names and upwards $1.10 each. Postage always pre-paid by the Publishers..... Premium clubs may be gathered at any number of post-offices, if all are sent in by the same person.

Study the Advertising Columns.—We often take up a daily or weekly newspaper and carefully read all the Advertisements through, and never do this without getting some useful information. One learns what business is being done, and how it is done—what is for sale, and by whom. *Our* business columns are of especial value, because of the care taken to exclude all advertisements from parties not believed to be honest. We mean to advertise for no parties who have not both the ability and intention to do all they promise. In order to please advertisers, we repeat the request that those sending orders, or for circulars, etc., to our patrons, will mention *where* the advertisements were seen. We also like to have advertisers thus get some idea of the large number of intelligent and enterprising people they find among our readers.

Only $3, will secure **TWO COPIES,** of this Journal, sent post-paid for all of 1877. See New Terms given in first column.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German edition of the *American Agriculturist.* It contains not only the Engravings, and all the essential reading matter of the American edition, but an additional *Special German Department,* edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other one contains so much useful information, or a tithe of its engravings. The Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners, and all would find it pay to do so.—Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc., because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond a couple of German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ Please call the attention of your German neighbors to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

Florida Paper and Map.—The Florida New Yorker, edited by J. B. Oliver, is a journal published in New York, with a view to facilitate emigration to Florida, and to afford information with regard to that State. The numbers we have examined are remarkably free from exaggerated statements, and it appears to be conducted with fairness as well as ability. The publishers send us "Apthorp's standard Map of Florida," which we at first thought was a reproduction of the U. S. Land Office Map, but a comparison shows it to be on a larger scale and more distinct, hence better for general use than that, which we have considered the most perfect map of the State. Price, in book form $1.25.

Drill for Turnips and Beets.—"T. G.," Kittrels, N. C. We recently illustrated one of the best double-row horse drills for sowing seeds of roots. It is made by Watson & Co., of Ayr, Ontario, Can.

Cheese Factories.—"L. B. P.," Clay Co., Ill. An illustrated article giving many particulars about cheese factories, and utensils employed therein was given in the *American Agriculturist* for April 1874.

Carrots for Stock.—"R. J. H.," Centerville, Iowa. A peck of cut carrots will make a feed for a horse or a cow. They are very healthful for horses, and tend to keep their skins loose and the hair smooth.

Grasshoppers in Kansas.—"Geo. F.," Essex Co., Ont. Canada. The Arkansas valley has been visited by the locusts, but since the year 1875 they have done no damage worth mentioning. In that year it was only the poorer settlers, who had no other resource than their sod corn, who suffered seriously. The locusts are not dreaded in that part of the State, as they come, when they do appear, at a season when the crops are safe. Last year they ate off the newly sown wheat in scattered places, and made it necessary to resow the fields. This was the worst of their visits last year.

"Diseases of Domestic Poultry. How to Avoid and Cure Them," is the title of a work by Geo. P. Burnham, well known as an author of books on poultry. As in the title, the avoidance is placed before the curing, so in the book he sensibly gives prominence to prevention rather than medication. Indeed, where the one is thoroughly understood and practiced, there will be but little need of the other. The demand for a work on poultry diseases is here met by a pamphlet of 50 8vo. pages, which tells about all that can be said on the subject. Sent from this office for the price, 50 cents.

Tree Labels.—Among the various labels now offered to nurserymen and others, none seem so permanent as those made by Mr. J. E. Woodhead, Chicago, Ill. They consist of slips of zinc, with the name of the variety plainly and permanently stamped in the metal. Of course this cannot be effaced, and so long as the label remains the name will be legible.

Record of a Jersey Cow in California.—"S. B. L.," Alameda Co., Cal., states. that "Virtue 2d," dropped 7th, Aug., 1874, on importation of her dam, and calving 13th March, 1876, gave 42 quarts of milk in seven days, from 15th to 22nd of November, following. This milk made 5 lbs. of butter. The feed was lucern pasture and cut hay, with 3 quarts of bran daily.

Estimating Weight by Measure.—"W. E. B.," Sykesville, N. Y. There are no trustworthy rules by which an inexperienced person can arrive at the weight of "hogs, cattle, and other animals by measurement." Those used to handling stock can make very good guesses by the help of a tape line and some methods of estimating; but the result depends upon the kind and condition of the cattle.

Sorento and Inlaid Work, by Arthur Hope; Chicago, John Williamson. A beautiful book for amateurs in sawed work, now so popular, giving useful directions and numerous full-sized and tasteful designs. Price, $1.50.

How many Cubic Feet of Hay in a Ton.—"H." No exact rule can be given for measuring hay in bulk. It depends upon the kind of hay, the condition in which it was when cut, the size of the stack or mow, and how long the hay has been packed. As a rough guess 500 cubic feet of timothy, and clover, or 700 feet of clover alone, or meadow hay, may be taken as a ton.

Fall and Spring Barley.—"A. G.," Rockbridge, Va. Barley is not nearly so tender a crop as is generally supposed. It has been found to stand the winter very well in the milder parts of England, and to spread and tiller very much through the long season of growth. This fall sown barley is the same as the spring sown, the same kind of seed being used for both sowings. Whether this grain would stand a severe winter in so mild a climate as Virginia, or not, is questionable, but this should be tried. There would be no danger further south, where a great yield of early spring fodder might thus be grown.

FEBRUARY is a GOOD MONTH, for any one to secure *free of cost*, one or several of very good, desirable useful articles, offered in our premium lists, (page 73). Individuals can well do this on their own account. Many have thus, during February alone, secured various Farm and House implements, Pianos, and a multitude of lower cost articles.—It is a good month for a company of farmers, or a Farmers' Club, to put their efforts together and make up a list of subscribers, that will secure *free* one of the Agriculturist Libraries, named in the premium lists, to be used by all the members, or neighbors. Thus: 18 subscribers, easily collected by half a dozen persons, (3 each), will secure a **$10** Library of the best books, (your own selection). Or 31 names, (5 each), will get a **$20** Library, and so on. Such Libraries are a public benefit, and many places have got them in years past, through our premium offers. Let every farming neighborhood try it this month.

DON'T FAIL

To Secure one of the

GOOD THINGS OFFERED

On Page 73, and send to the Publishers for an Illustrated List of Premiums if you have not already received it.

Fruiting the Akebia.—The "American Naturalist," in reporting the proceedings of the Academy of Natural Sciences, Philadelphia, has the following: "Mr. Meehan spoke of the *Akebia quinata*, an indigenous plant of Japan, where it bears fruit, although it had not been known to do so in this country until recently, when the fruit had been produced by a vine cultivated by Mr. Canby, of Wilmington, Del."—We know that our friend Meehan studies the *American Agriculturist* faithfully, but in this case his memory is at fault. The *Akebia* fruited in Westchester Co., N. Y., in 1868, and the fruit was figured in the *American Agriculturist* for January, 1869. Still the fruiting is of so rare occurrence that it is worth while to record it, and it gives us an opportunity to again call attention to the merits of this most excellent hardy climbing vine.

"Game Grass."—"G." Philadelphia. We know of no grass called "Game-grass" in West Tennessee or elsewhere. Several grasses are called *grama* and *gama*. Please get us a specimen.

Fine Double Chinese Primroses.—Mr. John Saul, Washington, D. C., who has been remarkably successful with Chinese Primroses, sends us specimens of some of his new seedlings. We have seen nothing to approach these in size of truss and of individual flowers, or in doubleness. The white is without a tinge of green, and the colored ones are of the most delicate tints imaginable. We congratulate Mr. Saul on his success, and add as a practical hint that Chinese Primroses are most satisfactory window plants, *provided* the amateur starts early, and gets his plants before they have been subjected to greenhouse culture. Plants that have formed their buds in the greenhouse, will rarely flower if transferred to an ordinary room, but if taken early in the season, they will bloom finely.

"The Lord's Land."—Three years ago, while spending a few weeks in Naples, Italy, we were agreeably surprised one winter morning, by the arrival of a goodly company of acquaintances and friends from America, on their way for an extended tour from Suez through the Sinaitic Wilderness, and on through Palestine, in various journeyings to and fro, up to the northern boundary. Among these tourists were James Strong, S.T.D., author of Harmony of the Scriptures, etc., etc., Rev. Dr. Ridgeway, and others, including engineers, photographers, etc. After doing Vesuvius, Pompeii, Naples and vicinity, we bid them God-speed as they sailed away on a stormy day for Alexandria.....Before us is one of the results of that journey—a large, beautiful volume with the above title, from the pen of Dr. Ridgeway, very copiously illustrated with 114 engravings and maps, and full of interesting descriptions of the country, incidents of travel, habits of the people, etc., etc. It is one of the most instructive as well as entertaining works on the entire Bible Lands that we have ever read. Published by Nelson & Phillips, 805 Broadway, New York. 744 octavo pages.

Value of Corn-Bran.—"G. W. B.," Phenix, R. I. We do not know precisely what is the feeding value of corn-bran, as compared with wheat-bran, but it is certainly much inferior to that. We should not wish to give more than 25 cents a hundred pounds for it, at which price it might pay to use it as food for hogs.

Foaming of the Cream.—"Subscriber," Alleghany Co., Pa. The foaming of cream in the churn is generally due to a too high temperature. To reduce it, turn ice cold water into the churn, let the cream stand a short time, and then go on with the churning.

Forage Plants—Durra.—Green forage plants are receiving more attention from our farmers than ever before; we last month gave an account of a new introduction, the Prickly Comfrey; this month we call attention to the merits of Durra, which, though old as a grain plant, has recently come forward as a forage plant, and we have at least two more little known plants to describe, for which great claims are made. We present these plants as matters of news, giving such information as can be procured, and leave our readers to judge whether it is desirable or not to experiment with them. In considering the value of different forage plants, it must be borne in mind that productiveness is not the only desirable quality, and that there is a difference of the nutritive value of different kinds of foliage, as there is in different grains and roots. A plant that produces three tons of green fodder to the acre, may be really more valuable than one yielding five tons. In our description of Durra on pages 59 and 60, there was not room to mention the nutritive value of its foliage. It is well known that the value of a food depends upon the amount of carbo-hydrates—fat and heat producers, and albuminoids—the flesh forming principles. The German chemists, Wolff and Knop, who appear to have analyzed every green thing used, or likely to be used, as forage, give an analysis of Durra, under its botanical name, *Sorghum vulgare.* A comparison with our most important forage crop, Indian corn, also their analysis, stands as follows:

	Carbo-hydrates.	*Albuminoids.*
Indian corn, leaves................	10.9	1.1
Durra, leaves.........	11.9	2.9

From this it appears that Durra is somewhat superior to Indian corn in its fat-forming elements, it is more than twice as rich in its flesh-forming constituents.

Farmer's Clubs.—"Volinia (Mich.) Farmer's Club," send their programme for 1877, which suggests some matters that may be of use to other clubs. The list of officers, and the whole programme for the year, is printed on a postal card. This is an economical hit which perhaps the officers of other clubs have not thought of. It goes to each member, and is in a convenient form to preserve in a pocket-book or elsewhere. The subject to be discussed at each meeting of the year is given. This shows wise forethought. We notice that one subject is the "Improvement of Highways." This should be on the programme of every club in the country. The roads in many sections are a public disgrace, and we hope that general discussion will lead to corresponding action.

Potato Puff.—Any left over mashed potatoes may be made into an excellent dish for next day's dinner. Mashed potato, 2 cupfuls; melted butter 2 tablespoonfuls, work well together and add milk, 1 cupful, and 2 well-beaten eggs. If the potato was not sufficiently seasoned for the table salt will be required. Bake in a quick oven until the top is a light brown.

Brown Bread.—Several have asked for a recipe for this celebrated New England bread, which is often called Boston brown bread. The following has been thoroughly tested and approved. Indian and rye meal, one quart each. Milk, 3 pints; soda and salt, two teaspoonfuls each; molasses, ¾ of a cupful. Steam for five hours, at the end of which time set the pan in a hot oven long enough to well brown the crust.

Cotswolds for Rhode Island.—Eight ewes and one ram of the flock sent to the Centennial from the Royal Agricultural College, Cirencester, Eng., were purchased by Dr. H. M. Howe, and placed on his farm on Hogg Island. The islands of Narragansett Bay are celebrated for the excellence of the mutton produced on them, and these fine sheep could have no better locality in which to develop their best qualities than here.

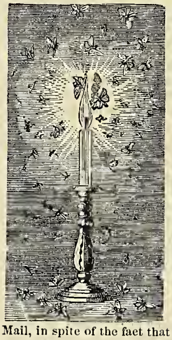
The Popular Health Almanac for 1877, by F. Hoffmann, and published by E. Steiger, N. Y. So many almanacs are published in the interest of quack medicines, that it is gratifying to find one which has for one of its objects battling "unsparingly against that insidious foe to health—the patent medicine humbug, a disgraceful and dangerous trade, conceived in fraud, and leading to disaster." Besides the almanac proper, there are useful tables, and much condensed and useful information on health topics. Analyses are given of a number of the popular nostrums. We wish this little work a large sale. It costs only 10 cents, and should be in every family in the land.

The One Hundred Days Tomato.—This variety was sent out last year by Mr. J. A. Foote, seedsman, Terre Haute, Ind. We had the seeds from him last year, raised the plants, and set them out with several other new kinds. The almost unprecedented drouth so checked and dwarfed our early plantings, that we had nothing like a trial of this or any other new sort, and we can only report what others say of it. Several well known cultivators in the Western States give very positive testimony as to its earliness and productiveness, and confirm Mr. Foote's moderate claim that it is one or two weeks earlier than any other. We hope to be able to give a better account of it another season.

Swivel Plows.—"M. H.," Bayfield, Wis. Swivel plows, those which turn so that a hillside can be plowed, or that flat land can be plowed, without making lands, or going around the field, are made by several manufacturers. The Higganum Plow Co., of Higganum, Ct., make a very good one; the Ames Plow Co., Beekman st., New York, also make a good swivel plow. By writing to these parties, a circular may be procured.

Draining Plow.—"M. H.," Bayfield, Wis. A ditching or draining plow with a share shaped something like an egg, and fastened to a thin strong standard, is often used for making drains. It leaves a round hole or space in the ground, similar to a mole's burrow, for which reason it is called a "mole plow." They are most useful in clay soils.

Sundry Humbugs.



Some months ago we congratulated our readers on the probability that, in future, they would not be annoyed by the receipt of so many lottery and other fraudulent schemes, as heretofore. We based our hopes upon the law passed at the last session of Congress, or rather the additions to a former law, which we supposed, as no doubt did the law makers, would effectually debar the swindlers from the use of the mails. While some of the smaller fry have been frightened off, the larger operators keep on, and their circulars continue to be carried by the United States Mail, in spite of the fact that the law forbids. In one of our interviews with the Post-office officials, in whose province such matters come, this lottery business was thoroughly discussed. These lottery swindlers have often been prosecuted, but never convicted; they have a plenty of money, which they make easily, and spend freely, and they engage the most acute and ingenious lawyers, and stand up and fight. The trouble is in the law itself, which is so defective--we need not point out to other swindlers where—that a sharp lawyer can "quash" any indictment found under it. "Why not amend the law?"—it will be asked. We are very sure that this will be done, but until it is, the law is of little value. We can assure our readers that this immunity enjoyed by these lottery and other swindlers, is not due to official indifference. Whatever may be the case with some public officers, those of what we may call the criminal Department of the Post-office, whether especially attached to the New York Post-office—by far the largest in the country—or those whose powers extend to all the post-offices in the country—are thoroughly in earnest; they not only accept the enforcement of the law as a duty, but are really desirous of doing all in their power to protect the community against the designs of swindlers of every grade.

THE WYOMING LOTTERY

has turned up in a new place, and a new game is being played. It is pretended that in settling up the affairs of The Topeka and Laramie Lotteries, there were $47,000 in unclaimed prizes, and that the "Supreme Court" (oh!) decided that the managers shouldn't have this snug little sum, but that the "Finance Committees" (oh yes!) should invest the money in useful prizes, and make another lottery. This is gravely set forth in clear type on handsome paper, and there are people who actually believe it. Well, the "Finance Committee" remove the remains of the defunct Kansas and Wyoming lotteries, "body, boots, and breeches," to New York City. Circulars go hence to numerous people, informing them that the "supplementary drawing" has been held, that the recipient has drawn a gold watch valued at $200, which can be had by paying the committee their "assessment" of $20. The mere statement of this scheme should be sufficient. Yet there are persons receiving these circulars, who write to us and ask us to go and get the aforesaid watch for them, and get back our $20 by selling the watch! Here we have been exposing humbugs all these years, and are expected to go and deal with the defunct remains of one of the biggest humbugs of the day. Excuse us! If any one supposes that the Wyoming lottery is dead while Pattee still lives, he has small knowledge of the nature of things. It still waves its banners, but they are now inscribed

"THE CHEYENNE STATE LOTTERY."

The blade may be lost and replaced, and the handle a new one, but it is the same old knife. The same genius who devised the "special terms to agents" in the Laramie affair, is manifest here. Poor Wyoming, were not the grass-hoppers enough? We can only hope to warn the unsuspecting; the regular lottery gambler is beyond our reach, and to those tempted to "try their luck" for the first time, we say *don't*. No greater curse can befall a young man than to draw a prize... In former numbers we have shown the various methods resorted to for

PROCURING NAMES,

especially of young persons. In so many cases have these been solely in the interest of wrong doers, or of those who procure lists for sale to any who will purchase them, that every scheme having the collection of names, as its object, must be looked upon with suspicion. A circular has recently been sent to post-masters and others, asking them to furnish the "names and correct post-office address of all the young people in your knowledge."—Accompanying this are blanks to be filled out with the names of young men between the ages of 17 and 30, and of "all the ladies in your knowledge between the ages of 20 and 45."—This is done under the plea of sending some publication about the Centennial Exhibition, but just *what* we do not make out from the circular. We have this matter under investigation—if it is a straight-forward affair, the projectors are unfortunate in adopting the methods of those whose ways are dark..... Quite the freshest thing in the way of a humbug, are the

TEXAS LAND SCHEMES.

The "Ohio, Kentucky & Texas Land Co.," lead off the procession that starts in the second century of the nation. They have somehow succeeded in placing their advertisement, and a very taking one, in papers usually regarded as respectable. They give lots away in "Mineral City," i. e., only charge a dollar for the deed. Allowing that the deeds cost 5c. or even 10c, to get up, it returns a good profit. They only "give away" (for $1) every other lot, but 25 x 100 feet in such a wonderful place as Mineral City, is but a provocation, and one will naturally want more, and we hear that some have *purchased* several lots. From the number that have written us in regard to this scheme, and the earnest character of the letters, we infer that the thing has taken like wild-fire, and the dollars have rolled in in a stream. We expect to see, before many years, Texas receive a large influx of settlers. There may be finer spots on the face of this earth than some parts of that wonderful State, but we have not seen them. Every fraudulent scheme of this kind hurts the State; the Texas people feel this, and are indignant that this Land Co. should assume their name to carry on a swindle. The Texas papers denounce it, and Mr. Dickerman, the Clerk of Graysou Co., Texas, where "Mineral City" is said to be, comes out with a very positive statement. He says "Mineral City has no existence, in fact. There is not a house on the ground, and no matter what may be said to the contrary, it has never been surveyed and staked off." He takes up the assertions of the Company, and instead of calling them misstatements, he uses a stronger word; thus: "The Company represent that their title is good, this is lie No. 1," and so on to "lie No. 6," and winds up by saying: "The whole thing is a humbug from beginning to end, and the company has persistently, by all manner of misrepresentations, misled many people to their hurt." The Sherman (Texas) "Weekly Register," publishes Mr. Dickerman's letter "In the hope that it may meet the eyes of some one who might otherwise be swindled by this monstrous fraud." So ready are people to catch at whatever scheme promises something for nothing, that they do not examine to see where the cat is under the meal, but "go it blind." It is estimated that this "Company" have "given away" over 100,000 lots at $1 for the deed. Allowing the expenses for advertising, etc., to be $25,000, it is a large haul. Other projects relating to Texas of a doubtful character are advertised. Look out!....It is well to start fresh in this new year of the new century. We have here

A NEW SYSTEM OF HEALTH.

The old style of health was well enough in its day, but the world has gone on improving. If Franklin, Jefferson, and the rest of the fathers had only known of it they might have lived until now; they tried some of the old "pathies" and died, but then

VITAPATHY.

hadn't been patented—or what is the same thing "copyrighted." We have here just the funniest little book that ever was put into a bright red cover. It is all about "Vitapathy," which originated by "Prof. J. B. Campbell, M. D. V. D." Whether "V. D." means "Veterinary Doctor," or what, we don't know, but we do know that the "system of practice is copyrighted," though just how it can be done we don't know. It starts off thus:

"VITA—Life, PATHY—disease.

Vitality cures disease. Life overcomes death."—Which nobody can deny.—Like butting ones head against a stone wall, it's so convincing. But let us read: "Vitapathy ascertains and teaches what is matter, its relation to spirit or life; its relation to all things, and how all things are formed out of it, and how material organisms are generated, built up and sustained." There now, "If you don't see anything you want, ask for it." That description of Vitapathy no doubt makes you think it has taken a pretty big contract—but that's nothing. Besides telling everything about everything, it does ever so much more. Nothing small about it—good measure at this shop. It teaches "how to develope the intellect, increase mentality, and expand the powers of the human soul to the most unlimited extent." Pretty good that, but it is nothing to what follows. "Vitapathy teaches a correct system of Psychology or science of the soul, and the power of soul over body, by which we can control ourselves and others—control patients, friends and lovers; in short, control everything and overcome the world."—There! We are glad the thing is "copyrighted," for it would be mighty dangerous to have it around loose! How wonderful, what power! do everything, overcome everything, control everything.—How richer than Stewart, Astor, Vanderbilt, and James Lick, all in one! Yet with it all Campbell can't "control" that stomach of his, he can't "overcome" zero weather in place of an overcoat, so to get something to eat and to wear—which he needs just like the rest of us, who don't Vitapath a bit, he sells Hearing Trumpets, Inhalers, Electric Apparatus, all for thrashy dollars, and also runs a college to teach his "copyrighted" system of quackery, and even issues "diplomas" to the fools who will pay for them and the "right to practice." We should like to know what kind of laws they have in Ohio, where a humbug like this can issue "diplomas"....We do not know who carries off the palm, Campbell with his Vitapathy or Mrs. Brown with her

METAPHYSICAL DISCOVERY.

Those who have regarded metaphysics as something intangible are mistaken, for Mrs. B. sells it by the bottle—to be sure at a round price, but it can be bought in the liquid form with a discount to the trade. And there is no beating around the bush with Mrs. B. "This great discovery kills the root of all disease"—which we submit is bad for the disease. The matter is brought down to a very fine point: "The sinewy nerves with the world of mystery in the human body, all partake of the three moistures, as every part and parcel of the ground, the trees, the roots, the branches, the leaves, all partake of the moisture—Dew, Rain, Frost and Snow by absorption."—Tyndall where are your "Forms of Water," now? It is all a very serious thought that "nine tenths of the children perish for the want of this three-fold moisture." Sad as is the subject Mrs. B. will have her little pleasantry. We read: "*Unsound flesh* becomes—through *Cold* and *Fever*—MORTAR. This mortar stops the wheels of the mortal machine,"—Oh Mrs. B., how could you! mortar stopping the mort-al machine is too bad. However, if we would'nt shuffle off this mort-al coil, we must slap on the methaphysic stuff, "which enters the system through the organs of the Head, Eyes, Ears and Scalp." She tells us that "the TEETH are shrubs, with roots far down in the earth; which demand moisture—as a necessity." That clearly accounts for the perennial drouth that we have noticed in some people. The funniest part of it all is that like the Vitapathic man, Mrs. B. has a Metaphysical University—something we never met-afore, though we doubt if any one ever met-a-physician in it.

Change in Seed-Firm.—Our many readers in Australia are informed that the extensive seed business formerly carried on at Sydney, N. S. Wales, by Anderson, Hall & Co., will be hereafter continued by the senior partner, Geo. Andersou.

"Fragariculture," is the title of a work on strawberry culture, by Felix Gillet, Nevada City, Cal. Mr. G. has raised several new varieties. This work gives his method of cultivation, and is illustrated by photographs of his own and other berries; 32 pages; price from 50c. to $1.25, according to number of photographs.

Boston Cream Cakes.—Several recipes have been asked for by our friends, and there not being room for them in the Household Department, they are given here. Cream cakes, as they are called in Boston, and "Cream Puffs" elsewhere, are remarkably popular in the modern Athens. The following recipe is from a friend who is very successful with it. Take of flour, sifted, 8 oz.; butter, 4 oz.; sugar, a teaspoonful. Rub together thoroughly and put these into a pint of boiling water, boil and stir briskly until it thickens; remove from the fire and add gradually 8 eggs, well beaten, and stir rapidly; when thoroughly mixed, let stand until cold. Have buttered tins ready, and drop this mixture in tablespoonfuls, about 6 inches apart, brush over with white of egg, and bake in a quick oven to a light brown color. When done these will be hollow shells which are to be cut open on one side and filled with the "cream," which is really a custard, to make which: beat two eggs to a froth, add half a teacupful of powdered sugar and then half a teacupful of flour; stir all into a pint of boiling milk, and cook until it thickens. When cool, flavor with lemon or other extract, and fill into the puffs or shells.

To be had without Money.—

There will be found upon our Premium List (see page 73) a large number of most useful and valuable articles, all of which are new and of the best manufacture, and any of which can be obtained *without money* and with but little *well directed effort*. Among these are: **Beautiful Silver and Gold-Plated Articles—Magic Bell-Head and Charm Pencils and Gold Pens—Fine Table Cutlery—Pocket Knives—Children's Carriages and Toys—Swings—Clocks—Table Croquet—Pianos—Microscopes — Watches — Guns — Sewing and Washing Machines — Books, etc., etc.**— Read all of page 73, and see how easy you can obtain one or more of these good and desirable articles.

The Illustrated Annual Register of Rural Affairs, for 1877, by John J. Thomas, Albany, Lnther Tucker & Sons. If Mr. Thomas would only give us a poor number of this Annual it would be a help, but it is very monotonous, year after year, to say that each issue is as good as its predecessor. Each number contains much useful matter, and a set—now 23 numbers, is a cyclopædia of rural affairs. Sent from this office, post-paid, for 30c.

Soap Manufacturers Refuse.—"G. W. B.," Reading, Pa. Soap manufacturers refuse contains sufficient potash and other fertilizing matters, to make it worth hauling five miles. As it is liquid, it should be handled in barrels and used in making compost heaps along with manure, swamp muck, earth or other absorbents. It may also be treated in the manner described in January, for using night soil.

Sausage Meat.—"Mrs. S. M. W." We have used the following recipe for the last 12 or 15 years, and have been so well satisfied with it that we have not cared to try any other. For 100 lbs. of meat, use 40 oz, of salt and 8 oz. each of black pepper and sage; those who like more seasoning can increase these to 10 oz. We keep the meat in two ways: Make bags of common cotton cloth about a foot long, and of a diameter proper for a sausage cake, and fill them with the meat, tie closely, and hang in a cold place. When wanted for use, cut slices from the roll and fry. Another portion is made into cakes and cooked as for the table; these are placed in a stone jar in layers, but do not touch the sides; then pour over the cakes the fat that comes from them in cooking, to which enough lard has been added to completely cover them. They only need to be warmed through. We have kept them in excellent condition until May.

Croquettes.—Because of their French name, and of the high-price charged at restaurants, many have the impression that they are far too expensive for ordinary families. This a mistake, as they afford a most acceptable form in which to use up the remnants of fowl, game, meats, etc. When presentable bits can no longer be cut from a turkey, chicken, or other bird, or there are the remnants of veal, mutton, venison, or even fish, an excellent breakfast or supper dish may be made. The material is to be chopped fine; one-half to one-fourth as much bread crumbs or mashed potato, a well-beaten egg to each cupful of the mixture, to bind it together, and if too dry make into balls, add gravy, or if none is at hand melted butter, salt, pepper, and whatever seasoning may be fancied, such as parsley and other herbs; a trifle of onion, catsup, etc. Make into rolls, balls, or mold in a wine-glass. Dip in egg, roll in powdered cracker, and fry, having the fat *very* hot, to a light brown. Properly made they will take up no fat. Some omit the egg and cracker on the outside, and simply flour them. They may be cooked in advance, and warmed through when wanted by placing in an oven. Scraps of several meats may be combined, and a little ham will greatly improve the flavor of those made of veal.

The Scholar's Book of Household Management and Cookery, by W. B. Tegetmeier, New York and London, MacMillan & Co. As this work was written at the request of the School Board for London, we infer that it is to be used in schools. At all events it treats of the principles of domestic economy in a plain and sensible manner, and at the end gives the recipes used at the "National Training School of Cookery." Price 50c.

The Botanic Garden and Arnold Arboretum.—Both the Botanic Garden at Cambridge and the Arnold Arboretum at Jamaica Plain, Mass., are under the government of Harvard University, and Prof.

Chas. S. Sargent is Director of both. His report for the year ending in August last is at hand, by which we learn that essential improvements have been made in the Garden, and that the Arboretum is increasing in importance. It was characteristic of the excellent James Arnold that he should provide in his will for an arboretum, which, when established, will be of national importance and usefulness, and most fortunate for the bequest and the public, that in its most important stage, the formative, the arboretum should be in the hands of one who so combines enthusiasm and executive ability with competent knowledge as does Prof. Sargent.

The Jerusalem Artichoke.—In an item upon the native country of this plant, published last month, we asked for any information in regard to its use by the aborigines. Hon. W. C. Flagg, Moro, Ill., whose lore is not solely pomological, calls our attention to the fact that Palfrey, in his History of New England, vol. 1, p. 27, says that the Indians raised "a species of sunflower whose esculent tuberous root resembled the artichoke in taste." This certainly looks as if the plant was known to the red men, but there is room for more evidence.

The Death of E. G. Henderson.—Mr. Edward George Henderson, founder of the widely known horticultural firm of E. G. Henderson & Sons, Wellington Road, London, Eng., died on Nov. 4th, last, at the advanced age of 94. He had not taken an active part in business for 12 years.

Basket Items continued on page 73.

Bee Notes for February.

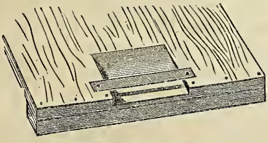
BY L. C. ROOT, MOHAWK, N. Y.

Bees, that are wintered in-doors, should be left entirely undisturbed during the present month. Those wintered on summer stands should be examined, and if dead bees have fallen before the entrance, they should be removed. During fair days remove the roofs to allow the sun to shine directly upon the hives. If the new Quinby hive is used, remove the lid to let the sun shine upon the packing, and the inside of the lid, and dry out all the moisture. In preparing caps for any kind of hive, which are to be packed with straw or chaff, and placed over the hive when left on the summer stands to winter, it would be well to have the top of the cap loose, so that it may be removed, and the sun allowed to shine in and dry up the moisture. In handling hives for any purpose, at this season, let every movement be made with the *greatest care*, to avoid as much as possible disturbing the bees.

Judging from present indications, bees may be expected to winter well; the honey contained in the hive seems to be of superior quality. On the first of Jan. I weighed several hives that had been weighed the first of Dec'r. Four hives in my bee-cellar, where the temperature was from 46° to 48°, had consumed as follows: the first ½ ℔, another ¾ ℔, and two others one ℔ each. A hive left on a summer stand had consumed a little over two ℔s. I propose to give the amount consumed by these swarms monthly, as well as the condition of the same in the spring, that the readers of Bee Notes may receive the benefit—so far as this single instance may go—of these observations on the two methods of wintering bees.

Entrances to Hives.

From some descriptions given by the late M. Quinby, of the entrance to his standing frame hive, several inquirers seem to have received a wrong impression. It will readily be understood that with the hanging frame, which hangs inside of a hive, with a space between each pair of frames, as well as between the ends of the frames and front of the hive, and between the bottom of the frames and the bottom board, that the entrance may be cut in the bottom of the hive, or a hole bored anywhere in the end of the hive for bees to enter, the same as may be done in a common box hive. With the new Quinby frame, where one frame sets directly against another, and all rest upon the bottom board, the bees must enter the hive through an entrance under the frames. This entrance, as shown in the engraving, is made by cutting a passage in the bottom board, about half an inch deep at the front edge, and slanting gradually up and back for about four inches to the level of the bottom board. A piece of hoop-iron is nailed across this opening, on which the ends of the frames may rest. This entrance should never be deep enough to allow a mouse to enter. The width should vary at different times during the season. If it should be open the entire width of the frames, during the busiest season, it would be advantageous. With this in view, the entrance should be made wide, with means provided to contract the same, even to one-quarter of an inch if necessary.



ENRTRANCE TO HIVE.

Questions and Answers.

TIPPING HIVES.—"Do you tip hives forward to slant the bottom board to the front?"—When swarms are first hived, in an empty movable frame hive, with frames running from front to rear, if the hive is tipped to the front, it will aid in securing straight combs. As soon as the combs are properly started, and before it is desired to put honey boxes in place, the hive should be set level. For no other reason do I consider it desirable to set hives other than level, while there are many reasons why they should be level.

DIRECTION OF COMBS.—Will it make any difference in the prosperity of a colony whether the combs run from front to rear, or from side to side?"..Not any difference.

BEES IN A KEG.—C. A. T., of Topeka, Kansas, has a swarm of bees in a keg, which he desires to transfer to a common box hive. I would advise him to make a simple movable comb hive, as described in "Beekeeping Explained," and follow the directions given in "Bee Notes" for May, 1876. If thought best to use the box hive, one should be made a little higher than the depth of the keg containing the bees, and as large square as the diameter of said keg. After driving the bees from the keg, as directed in the Notes above referred to, turn the keg top down, and remove the hoops. With a narrow saw, saw off the sticks that hold the combs in place at the sides of the keg, and saw the combs loose from the staves. After removing the staves, saw the combs loose from the bottom. Now place the combs bodily in the new hive, in the same position as when taken from the keg. Cut a stick long enough to reach across the hive, and nail it across the bottom, so as to hold the combs firmly against the top of the hive when inverted. Place it in the same position on the stand as the keg occupied, and shake down the bees in front of it.

Connecticut Agriculture.

The "Nutmeg State," as it is often called without a truthful reason, is ranked as one of the manufacturing States, and it does produce a wonderful amount and variety of "Yankee notions," clocks and carriages for example, as well as an immense quantity of staple fabrics and wares of almost all kinds, not to mention destructive things, as the three million dollars worth of war material just carried out in two steamships from New Haven, to Constantinople, with much more going there and elsewhere all the while. Compared with Illinois and Ohio, Connecticut does not make much show as a farming State, yet it has some pretensions in that direction. In proportion to the entire population, it has nearly twice as many farmers who read agricultural journals, as any other State. It has **25,508** individual Farms. Though only one of these contains over 1,000 acres, yet 5,787 have between 100 and 500 acres, and twenty-six between 500 and 1,000 acres each. These farms comprise 2,364,421 acres, of which 1,646,757 acres are under cultivation; 577,383 acres in woodland, and 140,331 in other lands unimproved. The valuation of these farms is $124,241,382, averaging $4,870.68 each. They produced (in 1870) $26,482,156, or an average of $1,038 each. Farm implements cost $3,246,599.

Connecticut has the first "Agricultural Experiment Station" proper, established in this country, which is already doing much to aid the farmers to a very large saving in getting good fertilizers, and avoiding imposition. (See Prof. Atwater's account elsewhere.) A long established Board of Agriculture, helps largely to keep farmers wide-awake and going ahead. The Annual Farmer's State Convention, which held its session at Middletown, Dec. 13, 14, and 15, was a well managed gathering, and in many respects a model one, presided over by Ex-Gov. Hyde, of Stafford, but chiefly, though quietly arranged and engineered by the Secretary, T. S. Gold, of West Cornwall. Dr. P. M. Augur, State Pomologist, had charge of a fine assortment of apples, etc., from various quarters, showing the capabilities of the State in this line. Meetings were held mornings, afternoons and evenings, at each of which an intelligent speaker led off with an address on a specified subject, and after each address farmers from all parts of the State joined in a vigorous discussion pro and con, upon the leading topic of the meeting. Much practical information was thus brought out, and those attending each carried home new ideas for his own guidance, and for diffusion among his neighbors. Full stenographer notes of all said and done were kept, and the gist of them will hereafter appear in the Secretary's Report, which is printed for distribution. We omit for want of space a full report of the meeting, though information collected at this, as at other similar gatherings, appear under various headings in the successive numbers of the *American Agriculturist*.

Science Applied to Farming.—XXVI.

Agricultural Experiment Stations, and Fertilizer Control Systems — Their Advantages — European and American Experience.

The following occurs in an article by Prof. S. W. Johnson, on "Science as a Means of Agricultural Progress," in the Tenth Annual Report of the Sheffield Scientific School. The statements are true as they are pointed:

"If we gather from the best consideration of the evidence at our hands that a field needs potash or nitrogen, or phosphoric acid, we find plenty of parties willing to sell us these things, but we also find that we can not depend upon getting the worth of our money. Our markets are full of 'superphosphates,' 'poudrettes,' 'tobacco-grower's,' 'bone dust,' 'bone flour,' 'ground bone,' of 'bone meal,' 'pure,' 'best,' 'finest,' 'celebrated,' 'rotted,' and 'dissolved,'—of 'meat scraps,' 'blood and bone fertilizers,' 'animal dust,' etc., etc., some good, some bad, and in many cases the good appearing to be on the way to the bad. Many of our farmers have laid out their money for some of these things and know that they were cheated, by not getting what was promised and what they supposed they were securing. Some have been bitten so badly that they purchase nothing, unless it is ashes, plaster, bone, fish scrap, or something which they can judge of by its looks. Some again have purchased these very fertilizers whose value they believed they could estimate by inspection, only to learn when too late that they have been ingeniously deceived, and that the supposed 'bone' contained twenty to fifty per cent of water, oyster shells, plaster, or niter cake, which had no value for their farming.

"The German farmers have had the same experience. It is just about twenty-five years since in Germany, as here, the trade in superphosphates, guano and similar commercial fertilizers began. The same stupendous frauds by adulteration and dilution of good things were practiced there as they have been here, and we have great reason to fear, still are carried on here. But the Experiment Station has perfectly cured and rooted out these evils in all the districts where it has been established and appreciated. The Experiment Station there [in Germany] is prepared to furnish the farmers at small cost with an analysis of any fertilizer he proposes to buy. The farmers there avail themselves of this aid. They will buy no fertilizer without an exact statement of its composition, and they buy with the understanding that any deficiencies in the stipulated amount of fertilizing matters shall be made good or deducted from the payment. Under such circumstances manufacturers can sell nothing that is not substantially what it claims to be. A further result of this system is that low-grade fertilizers are little sought, and those makers who can supply the best article, of uniform quality and at the lowest rates, have the business. With large sales the dealers prosper, while the consumers are satisfied with their purchases, and instead of trying to see how they can get along with small use of purchased fertilizers, they are studying how to use the greatest quantities to advantage. The fertilizer market in Saxony and Prussia, where the Experiment Station has the universal sanction and confidence of the farmers, is just as settled and satisfactory as any branch of trade, and the farmers there buy superphosphate, guano, potash salts, etc., with as much security of fair dealing as we can feel in the purchase of sugar or nails."

The only way to get good fertilizers at fair prices, is to know what makes them good, to understand what is the composition of the articles in the market, and select the ones which furnish the most of valuable materials, in the best forms, and at the lowest cost. In proportion as buyers make their selections in this way will competition be excited among sellers, based upon goodness of quality and fairness in price: poor articles will be driven from the market, and good ones sold, bought, and used with profit. To use them most profitably, we must understand what materials our soils and crops need; select the ones that furnish the lacking materials, and apply them properly. In farming, as in other business, the use of brains is necessary for success.

Numerous inquiries by visitors and by letters from nearly every one of the older States of the Union, in regard to the analyses of commercial fertilizers, and the "Fertilizer Control System" introduced in Connecticut by the State Agricultural Experiment Station, will, I trust, warrant some explanations here. The system adopted in Connecticut is substantially the same as has, with various modifications of detail, come into quite general usage in Germany and other European countries. The essential features are

1st. An agreement made with the Station by dealers in fertilizers to sell their fertilizers by guaranteed analysis, the verification of the analysis being left to the Station, and:

2nd. A provision whereby purchasers may have samples of the articles they buy analyzed by the Station at small cost, or for nothing.

In order to preclude all chance for mistake or evil as to the precise terms of the arrangement referred to, a form of agreement has been signed by the dealers who desired to place their wares, as sold in the State, under the supervision of the Station. This provides that all fertilizers sold in this State by the signer, or his authorized agents, at any price above $15.00 per ton, (except crude fish scrap), shall be guaranteed to contain certain specified percentages of nitrogen, phosphoric acid, potash, etc., etc.; that the official analyses made at the Station, shall be accepted as decisive of the correctness of the guaranteed statements of composition, and that the stocks of fertilizers kept for sale in the State by the signers of the agreement, or their agents, shall at all times be open to the inspection of the officers of the Station.

Three years ago, at the annual meeting of the Connecticut Board of Agriculture, were presented some comparisons between commercial fertilizers in use in Connecticut, and similar articles sold in Germany, where the control systems were in vogue. From these it appeared that the farmers of Connecticut had been paying at least 60 or 70 per cent more for the valuable ingredients in their fertilizers, than their brethren on the other side of the Atlantic. The cost of the raw materials is no greater here than there. In fact, large quantities are exported to the other side of the Atlantic, to be there manufactured into fertilizers. The cost of manufacturing is not much greater here. There was no just reason why farmers should not buy as good fertilizers and as cheaply here as in Europe. To aid them in doing so a control system was suggested. The results of its introduction are interesting.

At the annual Connecticut Farmers' Convention last December, a report of the first year's work of the State Experiment Station was given. This included accounts of analyses of fertilizers, among the rest, some 35 samples of articles sold before the establishment of the Station, and some 77 samples sold under its supervision. The number of these articles seemed ample, and the range in quality was certainly wide enough to afford a fair exhibit of the effect of the supervision exercised by the Station. Basing the comparison upon the costs of valuable ingredients, as determined from composition and selling prices, it stands as follows:

Valuable Ingredients.*	Average Cost per Pound.	
	In fertilizers sold before establishment of Station.	*In fertilizers sold under supervision of Station.*
Nitrogen	47.0 cts.	23.0 cts.
Soluble Phosphoric Acid	18.0 cts.	14.0 cts.
Insoluble Phosphoric Acid	$11.^{2}/_{5}$ cts.	$5.^{1}/_{2}$ cts.

If, instead of taking the fertilizers all together. we select a single class, and one of the most important ones, the nitrogenous (ammoniated) phosphates, the comparison will stand as follows:

Valuable Ingredients.	Average Cost per Pound.	
	In fertilizers sold before establishment of Station.	*In fertilizers sold under supervision of Station.*
Nitrogen	$59^{2}/_{5}$ cts.	$24^{9}/_{10}$ cts.
Soluble Phosphoric Acid	$19^{1}/_{2}$ cts.	$15^{1}/_{10}$ cts.
Insoluble Phosphoric Acid	$21^{1}/_{10}$ cts.	$5^{3}/_{5}$ cts.

In brief, the average actual cost of the fertilizers sold under the supervision of the Station is less than half that of those sold before the Station was established.

To make such a comparison as the above absolutely accurate, it would be necessary to take into account the total quantity, composition, and price of each article sold in the State. And while, on the one hand, more of the better class of articles analyzed are sold, on the other, there are doubtless a good many inferior articles which we did not get hold of at all. The figures doubtless under-rate rather than over-rate the benefit accruing to the farmers of the State from the introduction of the "Control System."

The amount paid for fertilizers for the 25,508 farms in Connecticut, is variously estimated from $500,000 to $1,000,000 per annum. Single towns are stated to use from $30,000 to $50,000 worth per annum. Taking the lower estimate ($500,000), if the Experiment Station can save only one-tenth or one-fifth instead of the one-half indicated above, the annual saving in the first cost of the fertilizers bought by the farmers of the State would be from $50,000 to $100,000 per annum. And when we consider the loss in the use of land and in tillage when poor articles are applied, the advantage that comes from being certain of the quality of articles bought, and from the more rational use that comes with better understanding of the nature of these articles, it is clear that the benefit must be much greater than these figures indicate.

The advantage that would be gained in most of the other of our older States from the introduction of such an enterprise as I have been speaking of, would doubtless be much greater than in Connecticut. The trade in fertilizers is much larger in many of them, and there are but few in which as much has been done in this direction, as had been done in Connecticut previous to the establishment of the Station, particularly by the State Board of Agriculture, and its chemist, Prof. Johnson, who is the pioneer in this sort of work in this country.

The sale of fertilizers by guaranteed analyses, and either inspection by competent authorities, or what is very much more important and useful, the provision of means whereby purchasers may have the correctness of stated analyses tested at little or no cost to themselves, are indispensable features of any control system. Just how the first of these provisions will be best enforced in any given State, will depend on circumstances. One most important point to be secured is the mutual coöperation of leading farmers and dealers. The rather remarkable success in this respect gained here, was due to several causes. The people were educated up to the point where they saw the good of it. The plan was initiated and executed by the Advisory Committee of the Station, a body which includes some of the most influential farmers of the State. The movement was made to appear, as well as to be, one on the part of the farmers, and dealers saw it was for their interest to join. Some thirty individuals, firms, and companies, including many of the heaviest manufactures in the country, and nearly all of the more influential ones who sell in Connecticut, have allied themselves with the Station. They have done so because they have seen that this was the surest means to secure the best patronage, exclude illegitimate competition, and put their trade on the most just and profitable basis.

I have insisted strongly upon the need of means whereby purchasers shall be enabled to have samples of fertilizers they buy analyzed at small cost or for nothing. The importance of this is well illustrated by some of the facts that have come under the notice of the Station. One of the worst frauds discovered was an article sold to several members of a Farmer's Club, who had taken special pains to have some of the fertilizers they were about to purchase analyzed in advance, but had, in this case, taken the assurances of an agent that his article "had been analyzed and was excellent." Another of the poorest articles analyzed was one of a number of samples sent by manufacturers to another Farmer's Club, and brought by the latter to the Station for examination. The great difficulty in the way of analyses is the expense, which at fair rates will vary from ten to sixty dollars. For an ordinary superphosphate, a fair price is thirty dollars or more. At the Station here analyses for public use are performed gratuitously so far as the time at the disposal of the chemists will allow. While a large number of analyses have been made during the past year, in no case has any charge been made to farmers for whom they have been performed. W. O. Atwater.

Ogden Farm Papers.—No. 84.

BY GEORGE E. WARING, JR.

The question of summer-fallowing, to which I have referred in earlier numbers of these papers, is brought again to mind by the receipt of an analysis from Prof. Atwater, of some earth-closet manure that I submitted to him for examination. I have on hand about two tons of this material, which I have purposely kept, in order to see how often earth (or anthracite coal ashes) may be used without losing its efficiency. The experiment was begun six years ago. A little of the manure has been used on flower beds, etc., and a little fresh ashes has been added, but not enough to effect the general result. The closets are filled, on an average, about six times a year. When the vaults are emptied, the product is simply heaped up in a well ventilated cellar, and left to dry; the heap is then used as a source of the next supply needed. The whole amount is enough to fill the reservoirs three or four times, and I estimate that the material now on hand has passed through the closet *ten times*. So far as can be judged by its appearance and smell, it is precisely the same as when first prepared for use—a dry mixture of earth and ashes, say one part of the former and three parts of the latter. It has the same apparent effect in the closets that it had at the outset. Neither the eye, the nose, nor the hand can detect any change from its original condition. The examination in the laboratory has been equally powerless to detect any trace of organic fouling. This is the report:

Conn. Agricultural Experiment Station,
Middletown, Nov. 7th, 1876.

"The following is the result of alalysis of closet earth, etc. (*Parts in* 100.)

Water	1.31
Organic and Volatile	10.72
Phosphoric Acid (P_2O_5)	0.37
Potash (K_2O)	0.33
Nitrogen	0.28
Equivalent to Ammonia	0.34

(Signed) Ed. H. Jenkins, Chemist."

Prof. Vœlcker gives the following analysis (so far as these elements are concerned) of fresh earth prepared by drying and sifting for use in closets:

Organic and Volatile	9.88
Phosphoric Acid	0.18
Alkalies and loss in Analysis	1.35
Nitrogen	.31
Equivalent to Ammonia	.37

Of course earths vary, and the composition of the ashes would modify the composition of my mixture, but, practically, making due allowance for such variation, this material, which has passed ten times through the closet, has not had its composition materially affected by the paper, fæces, and urine, with which it has been so often charged. The amount of these foreign matters has not been slight. The closets have been used—at a moderate average—by four grown persons for six years. It is estimated that the solid (dry) matter voided in a year by an adult is, in the fæces, 23 lbs, and in the urine 34 lbs. Assuming that one-third of the urine was voided into the closets, the total dry matter would be about 34 lbs. yearly, for each person, making a total, for 4 persons and 6 years, of over 800 lbs.

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* The number of articles containing potash was so few and its quantities so small, that it is omitted in the above comparisons.

This solid matter would contain over 230 lbs. of nitrogen. The two tons of my material contain only about 400 lbs. of solid organic and volatile matter, and probably the most of this was there before it went into the closet at all. The content of nitrogen, by the analysis, will be only about 11 lbs.—in fresh earth, as per Vœlcker, it is about 12 lbs. Practically, all the solid and liquid excrement, and all the paper and chance rubbish that have gone into the closets, have entirely disappeared.

It is very important for our purpose to know what has become of them. I venture the hypothesis that they have been as effectually destroyed by combustion, as though they had been thrown into a furnace. And I hazard the further inference that a load of stable manure, mixed with the soil of a field which is "summer-fallowed," will go the same gait to destruction—and not the manure alone, but equally the enormous accumulation of organic remains (roots, etc.) left by its former crops. More or less of all this foreign matter will be turned to charcoal, in proportion to the thoroughness with which the soil is opened to the air, and if the cultivation is very defective, much of it may thus escape entire destruction. If the cultivation is very thorough, very little of it will escape.

All porous substances condense gases within their pores—especially do they fill themselves with oxygen in a very active condition. A heap of cotton waste, saturated with grease from machine cleansing, sometimes breaks into actual conflagration from the rapidity with which its oil is oxidized. Rapidity of oxidation gives intensity of heat, and "spontaneous combustion" is only such a hastening of the process as to produce heat faster than it can escape safely. Charcoal (which is so porous that it has interior surfaces equal to from 50 to 100 square *feet* to the cubic *inch*) condenses oxygen in a condition most serviceable for deodorizing purposes, and it is now well understood that it is not simply an absorbent of foul gases, but a destroyer of them. Not alone is this true with regard to gases, but to all organized matters. Leaves mixed with charcoal dust and made moist, entirely disappear. The oxidation is believed to be due, not at all to the chemical character of the carbon, but only to the porosity of the charcoal; and other substances favor the process in proportion to their porosity. Platinum sponge is a very active inciter of destructive oxidation. Dry, or slightly moist earth is a busy agent in this work. A bit of muslin covered in the ground, soon becomes rotten, and in time disappears. The foulest human excrement, covered with sufficient earth to take up its moisture, without becoming so wet as to exclude the air, (oxygen), is at once deprived of all smell, and within a few weeks every trace of it has passed away. The common belief is that it is "absorbed" by the earth. This is true, but it is probably absorbed only to be consumed. The pores of the earth are the slow furnace in which it burns silently away, leaving only ashes behind.

If this process takes place in the vault of the earth-closet, why not equally in the oft-turned soil of the open field, where the exposure to the air is so much more free? It is not to be supposed, however, that the earth is no better fitted for plant growth by its use in the closet, nor that summer-fallowing is without great effect. The earth is not merely a passive container of the organic matters decomposing within it, and of the oxygen by which the decomposition is urged forward. It is a compound substance, the chemical combinations and the physical conformations of which are much modified by the chemical activities taking place within it. So far as its most important constituents (mineral plant-food) are concerned, it is vastly benefited by these activities. Its particles are disintegrated, and its unavailable mineral food is developed for the use of roots. This result may very well justify a resort to summer-fallowing under proper conditions, and it may so add to the value of earth used in closets, as to make the manure question a valid argument in favor of the earth-closet. The frequent good effect of bare fallowing, and the well known instances of the successful use of closet earth, can, it seems to me, be accounted for in this way, and in no other.

All I maintain is that the loss of organic matter—roots, manure, etc.—in fallowing, and the entire destruction of the corresponding matters in closet-earth, should be taken into the account in deciding our course; and that the common expression among farmers that land may be "plowed to death," is based on a sound principle.

Perhaps when we learn more about it, we shall know that the fertility is due less to the amount and kind of plant-food contained in the soil, than to the ceaseless changes of form and relative condition of its decomposing organic matters, and of the reaction of their resultant products, (and of the heat evolved), upon the more dormant mineral elements. Where all is seething with decomposition and re-composition, there, perhaps, will the hungry young root find its best foraging ground. The greatest activity of disorganization may give the greatest activity of new organization.

One more deduction may be made from all this: It has been held to be a leading and a very serious objection to the earth-closet system, especially for use in towns, that the labor of bringing in the enormous amount of earth required, and of carrying out the increased quantity from the closet receptacles, would call for too much costly handling. This objection would be a sound one were the earth to be regarded only as a medium for the odorless removal of the excrement; but if we accept the belief that it is only the lurking place of that best of all scavengers, oxygen, and that year after year the cleansing work may go on, over and over again, in the always purified recesses of the same earth—no trace of any impurity remaining—then our supply may be taken in, once for all. We shall need enough to give time for rest and oxidation, between the successive usings of each portion, but no provision need be made for frequent introduction of fresh material. My whole household has been amply provided by two small cart-loads of earth, brought in six years ago, supplemented by the sifted ashes of the kitchen range and furnace. For a long time, even those have been carted away—we prefer the old stock, as fresh ashes are too dusty.

It has been suggested that there may be danger of infection in the accumulation of closet-earth in connection with habitations. So far as experience goes, here, in Europe, in Jamaica, and in India, no contagion has ever been traced to a *dry* earth closet, nor to a sheltered heap of closet-earth. Pettenkofer's "ground air" poisoning—if his theory is sustained—traces to occasional conditions of saturation. Closet-earth, properly managed, is always dry enough for the free entrance of air. It is not *fermentation*, but *slow combustion*, which destroys its burden of filth, and—if we may speculate on the feeble data now available—it is to fermentation, which Pasteur aptly calls "life without air," that we are to look for the reproduction of the living germs of infectious disease.

Mr. Haven (Mich.) writes that about two years ago he bought my work on Draining, and put in about 80 rods according to its directions. Some of the ground, cleared 15 years ago, had never been plowed. It was a wet muck-swamp with a boiling spring, which kept it saturated even in summer. The quicksand troubled him very much, but he put tarred paper on the joints, and packed the tiles in clay—using no porous matter over the tiles. The spring was led away by a 2½ inch tile. The land is now sound and dry. If people would only understand that water enters the tiles *from below*, and that the top and side of every joint should be made as tight as paper will make them—to keep out dirt—they would get a much better result from their work. Newspaper is as good as any other. All we need is to keep the dirt out, until it is firmly settled—after this it will hold itself in place. It is only the loose crumbs of new filling that will do harm, Mr. Haven employed no engineer. He simply followed the instructions of his book.

In the autumn of 1867—nine years ago—Mr. T. T. Turner, of Normandy, Mo., gove $350 for a Jersey cow. This was as high a price then, as $600 would be now. High though it was, it was a good investment. She and her descendants have brought Mr. Turner $330 in premiums at fairs. He has sold 21 of her descendants for $3,099, and has nine head now on hand worth, at the lowest estimate, $2,575. This is a total of $6,004 in nine years. If he had given as much for this cow, as Mr. Chas. L. Sharpless has just paid for "Young Pansy," ($2,500), he could have added $1,000 for insurance, and still have made a profit. The fact is, that a good cow or a good bull lasts for ever. Captain Turner's grand-son (if he keeps up the herd) will feel the influence of old "Plenty," and so will all who own the descendants of her offspring which have been sold. One good ancestor starts a movement which will manifest itself to the remotest generation. Its *blood* lives on, and no one can estimate its ultimate value. Some day we shall have a herd *all* the members of which are as good as good breeding can make them. Whoever owns this herd, can sell his best bull calves for $1,000 apiece, as fast as he can supply them. Fortunately, Jersey breeding is in the hands of skillful men, working with a good organization, and determined that no "fancy" quality shall stand in the way of the highest dairy quality of the race. Fortunately, too, the better butter-making farmers appreciate the value of the breed, and there is reason to believe that before many years, Jersey blood will be a *sine qua non* in every butter-producing herd.

It will be agreeable to many owners of good Jerseys, to know that the rules of the American Jersey Cattle Club have been so modified, that animals imported from the Island can be entered on evidence of their importation, without the necessity for the photograph and certificate, which are now required. The *date*, importation, name of importer, etc., must be given of course.

American Hops.

The growing of hops in the United States is becoming a staple business. It has been lifted out of its previous unsettled, speculative character by the demand for foreign export, which has now become settled and permanent. Foreign markets are now opened in England and Germany, and our product has acquired an established reputation. It is not to be expected that hop growers will in future dig up their yards in disgust, at the impossibility of disposing of their crop, but those who once enter the business will remain in it, taking good and bad seasons as they come, sure on the average of a fair profit for their labor. The past year's crop amounts to 130,000 bales of 200 pounds each. Last year 60,000 bales were exported, and the probability is that the present year's export will equal that of last year. Up to November 1st, 1876, over 55,000 bales had been received at New York, against 24,000 bales up to the same date last year, and 37,000 bales had been exported. The great hop-growing districts are in Western New York and Wisconsin, and the growers in these localities have formed an association for the collection of statistics, and of information relative to their business, which has been found of great value to their interests. In view of the established character of the American hop trade, and the promising future that may be expected for it, we may look for a considerable increase in the culture of this crop, and improved and more successful methods of managing it, as regards diseases and vermin which affect it, and the processes of curing and preparing for market. The prices for the past year have averaged 27 cents per pound, which has given a very profitable result, yielding from $250 to $300 per acre. This is not by any means the highest yield per acre, but there are seasons when prices are much lower, and it is only by steadily perservering with his crop, through a series of years, that the grower reaps his profit, which then on the whole is satisfactory

A House, Costing $7,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

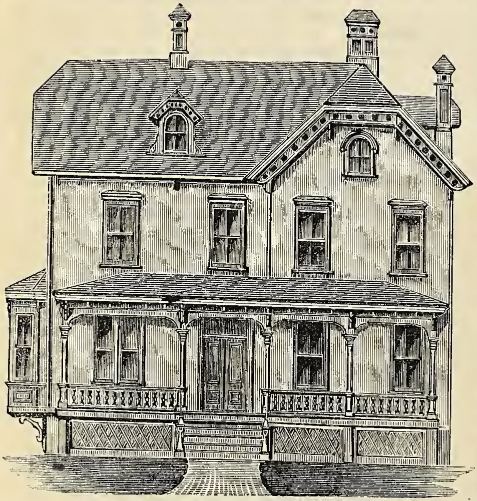


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

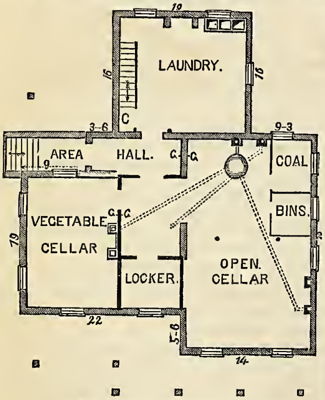


Fig. 2.—PLAN OF CELLAR.

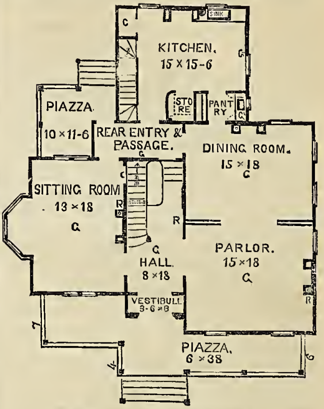


Fig. 3.—PLAN OF FIRST FLOOR.

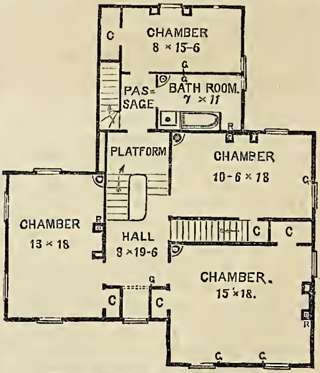


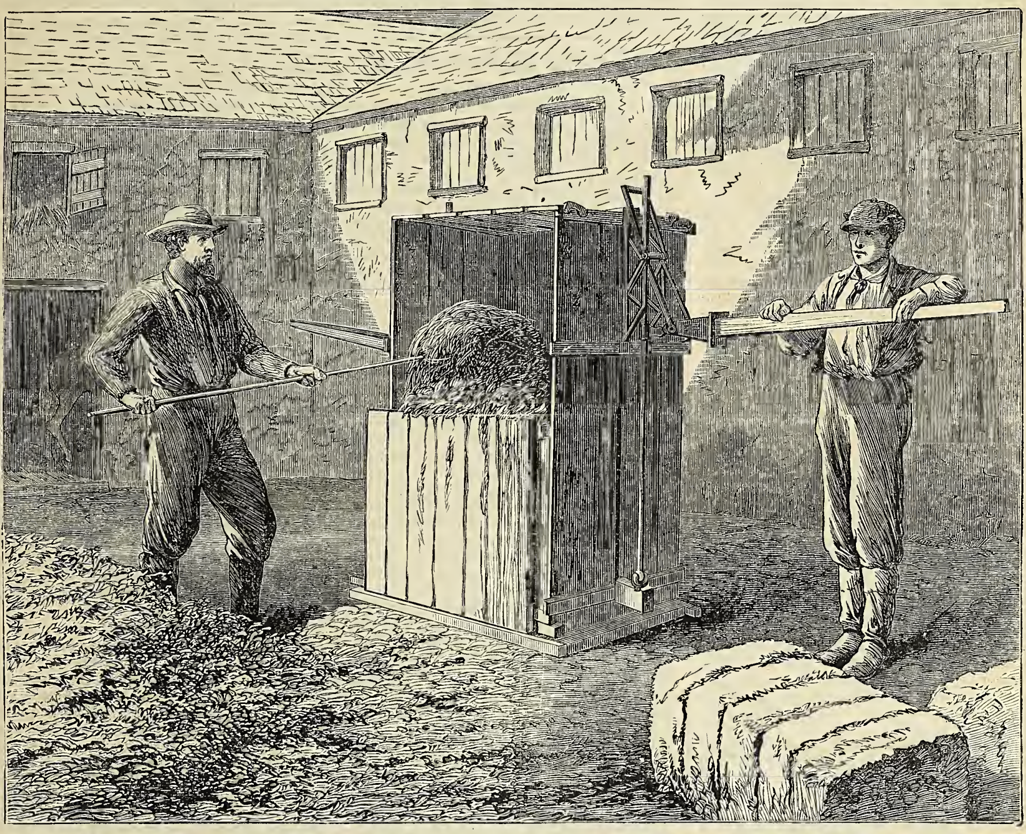
Fig. 4.—PLAN OF SECOND FLOOR.

The accompaning plans were designed for a suburban residence erected during the past year by Mr. Bernhard Greeff, at College Point, Long Island, N. Y. The general outlines were determined with especial reference to the location—which is elevated, overlooking the East River to the north and west, Flushing bay and the village to the south, and with an eastward frontage to the street, giving pleasant views in all directions. With these points fixed, it is easy to see the propriety of placing a broad side to the bleak or northern exposure, and putting such breaks or angles as are required in the more sheltered directions....**Exterior,** (fig. 1.)—The style of this example is homelike, and shows to the best advantage when placed in comparison with those of more fanciful design. Sufficient irregularities are made in angles and projections to give variety. The details shown in the front finish are continued around the sides and rear. The hight of the rear wing is one story less than the main house. While the appearance of this house is agreeable on every side, the most pleasing is from the southerly direction....**Cellar,** (fig. 2.)—Hight of ceiling 7 feet, of which 4 feet are above ground. All parts are well lighted with windows, except the hall, which has a sash-door with iron guard. The Laundry has an open stairway to the kitchen, and is provided with wash-tubs. A Water-closet is placed under the stairs. A Furnace is placed in the northern division of the cellar, with pipes for conducting warm air to each room and hall in the two stories of the main house, and to the bath-room....**First Story,** (fig. 3).—Hight of ceilings in main house 11 feet; in rear wing 8 feet 5 inches. The Front Entrance is through a vestibule leading to the main hall. The Hall is large, contains the principal stairs, with a closet under them, and communicates with the parlor, sitting-room, and rear entry. The Sitting or Family-room is arranged to be the pleasantest apartment, has double-windows front and rear, (the rear ones opening to the floor), and a large bay-window giving an outlook in three directions. Each of the principal rooms has grates for open fires, side registers leading from the furnace, and marble mantles. The Rear Entry communicates with the several apartments, and the rear piazza. The Kitchen has an elevated range, boiler, sink, drain-board, two closets, and enclosed stairways leading down to the laundry, and up to the second story; it communicates with the dining-room through the butler's pantry, the latter is "dresser finished" with sash-doors, copper wash-trays, etc....**Second Story,** (fig. 4).—Hight of ceiling in main house 10 feet, in wing 9 feet, with side breasts 5 feet. The floor of the wing is level with the platform of the main stairs. The full ceiling above this platform is arched over, and conceals the roof angle of the wing. An inside and smaller arch leads to the passage beyond. Both of these arches may be seen from the lower hall, and are pleasing features. An arch between the closets at the opposite end of the hall makes an alcove to the hall window. The room divisions are similar to those of the first story. Closets are provided for each chamber. The Bath-room is conveniently arranged and furnished....**Attic.**—Hight of ceiling 9 feet, with breast-walls 3 feet. There are 3 good sized chambers, a hall, and 7 closets in this story. Four dormer and three gable windows are provided .... **Construction.**—The *time* allowed for the erection of most buildings is too limited. Although this house was built by contract, no haste was enjoined, six months being allowed for its completion, giving the builder an opportunity of selecting the materials and workmen, and of applying the parts in their proper time and order. The exterior foundation walls, to the level of the ground, are of broken stone, 18 inches thick; the balance of hard brick, 12 inches thick. The frame is of full-sized timber; all beams and studding are placed 16 inches from centers. The siding-boards are 6 inches wide, rabbeted, and laid 5 inches to the weather, on stiff tarred "sheathing-board," weighing 1½ pound to the square yard. The exterior frame is "filled in" with pale brick. The main and wing roofs are covered with Keystone slate on tarred felt over hemlock boards. The main gutters are of double cross tin, laid in with the slate as shown in the *American Agriculturist* for May, 1875. The roofs of the piazzas, and bay-window, are of single cross tin. The cellar bottom is concreted with hydraulic cement and gravel, 3 in. thick. The laundry and cellar hall have the usual wide flooring, and are thoroughly plastered and finished. The partitions in the cellar, and the coal-bins are of dressed plank. All the floors in the two principal stories are double, the first being of ordinary dressed flooring—the second is "*parquet*" flooring laid of ¾x2¼ inch yellow pine, and black walnut. The black walnut is used only in the borders and centers. These borders are made by laying from five to eight courses of alternate woods all around the rooms, ending at the hearths. The widths and arrangements are changed slightly in the different apartments to give variety. These floors are intended to dispense with the use of carpets; rugs, covering the central portions of the floor, being adopted in their place. Unlike the stationary carpet, these may be easily removed for airing, and the floors cleaned daily if desirable. The three upper stories are hard-finished, on two coats of brown mortar. Each room and hall in the first and second stories of the main house have suitable stucco cornices and centers. The interior wood-finish is complete, all of clear and seasoned materials. Bronzed hardware is used in the first story, and porcelain in the balance of the building. Gas-pipes are inserted for thirty lights, properly distributed through the house. Five bells are included in the fittings. All wood, tin, and exterior brick work has two coats of best paint. The outside doors, and the halls, are grained in imitation of hard woods. The stair rails, door saddles, and the hard wood flooring, are rubbed with linseed oil. The following are the estimates of the *cost*, as per contracts :

Mason work, completed		$1,650.00
Roofer's work,	do	337.00
Carpenter's work,	do	3,573.00
Plumber's work,	do	590.00
Furnaces,	do	200.00
Mantles,	do	300.00
Painter's work,	do	350.00
Total		$7,000.00

Baling Manure for Transportation.

The production of manure in the stables of the large cities, amounts yearly to many thousands of tons. In its ordinary condition this can not be profitably transported to a long distance, nor to a comparatively short distance, unless a conveyance by water can be procured. Even when carried a few miles, the slow process of repeatedly handling it with forks, is costly, and largely restricts the use of it. Any method of so treating this city manure that it can be rendered less bulky, and brought into a condition in which it can be quickly handled, would not only add much to its value, but would largely extend the distance to which it could be carried for distribution to the farmers who need it. The desired plan appears to have been hit upon by Mr. Ackerman, of New York, who conceived the idea of pressing the manure into bales, for preservation as well as transportation. Nothing could be more simple, and it seems strange that the idea did not long ago occur to some one engaged in the manure business. The inventor of the method, however, is the first who has applied it to this use, and he has procured a patent for the process. Considering that a largely increased value is given to this refuse matter by the process, and that every one concerned may be a gainer, it is not unreasonable that some benefit should accrue to the patentee. The baled manure was exhibited at the late fair of the American Institute, where an award to the exhibitor of a silver medal was recommended by the judges of agricultural implements and appliances. The process of baling is shown in the accompanying engraving. The fresh manure, as it is thrown out from the stables, is pressed in an Ingersoll press, or in any other press that will bale hay. When the manure is so compressed that a bale the size of an ordinary hay bale weighs 400 lbs., it is bound by wires, and is then ready to be shipped like any other merchandise. Thus pressed and baled, ten tons or more may be carried upon a car, and if shipped by vessel, it can be carried much more easily than heretofore. The loading of ordinary manure adds greatly to its cost, but when baled this is largely reduced. Besides these advantages, the quality of the manure is improved by the process, there being no danger of its being injured by over-heating while it transit. A bale that had been pressed for many months, was exhibited to the judges at the American Institute, and was found perfectly decomposed within, and in the very best and most perfect condition. There had been no waste of any valuable constituent; the manure was moist, of the texture of the finest peat, and in fact was in every respect all that could be desired by the most exacting farmer. By this process, the manure made at any large stable can be pressed daily or weekly, and the solid, compact bales may be piled up in a shed to await a convenient season for removal, the compressed state of the manure prevents its fermentation, excepting very slowly, and it remains in a good condition indefinitely. This invention benefits both producer and consumer. The proprietors of the stables will receive a higher price for their manure, and the farmers or gardeners can afford to pay the higher price, and be gainers besides, because of the ease and rapidity with which they can load and transport the bales.



BALING STABLE MANURE FOR TRANSPORTATION.—*Drawn and Engraved for the American Agriculturist.*

The Plymouth Rock Fowl.

BY DELORME BENEDICT, ROSSVILLE, STATEN ISLAND, N. Y.

[The portraits of the Plymouth Rock, given in the group of poultry on our first page last month, were drawn from birds exhibited by Mr. Benedict at the Hackensack Poultry Show, and which carried off the first prize for this breed. As these fowls are now attracting much attention, we requested Mr. B. to give an account of their peculiarities, and his estimate of their value. This he has done very fully in the following article, for which we were unable to find room last month.—EDS.]

The excellencies which are found distributed among the various breeds of fowls, are usually accompanied by some defects. The Plymouth Rock breed, in my opinion, embodies in a large degree more of the good qualities, with less of the defects, than any one established breed, which renders it the "farmer's fowl" *par excellence.* Undoubtedly the first requisite in any breed of fowls for it to be *profitable* to the farmer is, hardiness or vigor of constitution. Unless a breed has this, the standard will not be maintained for any length of time under the care usually bestowed by farmers upon this branch of husbandry. Ability to withstand the severe climatic changes of the North and West, has been imparted to the Plymouth Rock through thoroughly acclimated ancestors—the American Dominique. From this breed it also derives the color of its plumage, which was one of the numerous varieties of color found among the common barnyard fowls of this country, before the introduction by importation of foreign blood, and known as the "hawk color." A striking peculiarity of this fowl is the "working garb," so to speak, in which it presents itself; the entire absence of every superfluity, which, however pleasing to the eye of the fancier, is to the farmer suggestive of a want of sympathy with him in his daily toils, and who wants nothing so much for show as for use. There is no excess of comb and wattles in this fowl, as in the great egg-producing breed, the Leghorn, which, in severe cold winter weather, is sure to become frozen, and this, if it does not cause the death of the fowl, after much suffering, leaves it at least disfigured. The Plymouth Rock has a single, upright, moderate sized, well proportioned, serated comb (as may be seen by the illustration given in the *American Agriculturist* in January), with wattles to correspond. This fowl is not burdened either with the crest, muff, and beard, which by some are considered ornamental in the Houdan and Polish breeds, but which nevertheless are a great disadvantage to the fowl, as the chicks, when feathered and left by the hen, cannot see upwards very well, and often become a prey to hawks, which pounce down upon them; nor can they readily get out of the way of the animals in the stable, or cow-shed, but are trampled upon and maimed, or disappear very mysteriously in the pig-pen. Though like the Dorking (that old English breed so justly celebrated as a fine table fowl) in size, and in the abundance of delicate and well flavored flesh, the Plymouth Rock is not encumbered with the fifth toe, an indication of weakness in the legs, which peculiarity in the Dorking has so strong a tendency to run into a deformity, that it is, as all breeders know, only checked by careful selections for breeding, and by frequent infusion of fresh blood. The Plymouth Rock is superior also in having bright *yellow legs*, instead of white or flesh-colored legs, like the Dorking. So long as the yellow color of the legs is regarded in the markets of this country as the most reliable indication of the good quality of the flesh, it is a matter that cannot be ignored—however false it may be in fact, until consumers are educated out of the notion. The legs of the Plymouth Rock are not only yellow, but are clean, not lined with a quantity of stiff feathers down to the extremity of the outer toe, as the Asiatics are. These feathers are in the way during incubation, and often cause the breakage of eggs in the nest, and the consequent spoiling of the whole setting, if not discovered in time. It is like the Brahma fowl, however, when mature, in being well supplied with an abundancy of downy feathers, which, though they may not lie as close to body as in some breeds, yet do so sufficiently to protect them from the weather, and are equally adapted to secure the comfort of the fowl in the heat of summer or the cold of winter. Like the Brahma, the Plymouth Rock lays well during the winter, but is never so much inclined to become broody as to be an annoyance, a propensity that has discarded the Cochin fowl from many barn-yards. On the other hand, this absence of all desire to incubate, as is the case with the Leghorns and other egg-producing breeds. is so serious an objection that it prevents these breeds from becoming generally introduced. The Plymouth Rock hens are good mothers and sitters. The chicks mature moderately early, and when grown, are not excessive consumers of food. It is claimed that this fowl originated from a cross between the common American Dominique, as already stated, and the Black Java, a breed almost, if not quite, extinct in this country. This claim is disputed by some, and is giving rise to much warm discussion among breeders at the present time, and is not yet settled beyond question. It cannot be denied, however, that a fowl entirely resembling the Plymouth Rock may be produced by substituting the Brahma for the Black Java, and it only remains, by careful selection and a period of breeding, to establish a strain indistinguishable from the Plymouth Rock, and yet have no relation to it. This fact does not go, however, to prove that the claim put forth of its origin is not the correct one, though it might be questioned on account of the buff color of the Plymouth Rock fowl's egg, which is like the eggs of the Brahma, a circumstance which rather favors the opinion that it has originated from this source. This dark color of the shell is objectionable to many, however much may be said in favor of the egg in other respects. It is certainly not so beautiful as the pearly white, well shaped egg laid by the Black Spanish hen, and until this change is effected by our breeders, while still retaining and improving the good qualities of this fowl, the Plymouth Rock can not yet be regarded as perfect. Taken all in all, there seems to be no breed which will give so general satisfaction as will this, or which will return a larger profit for its keeping, and these advantages should certainly recommend it for trial, at least as the farmer's fowl.

Among the Farmers.—No. 13.

BY ONE OF THEM

Good Roads, and Springs for Heavy Wagons.

There was an interesting paper upon roads published in the last quarterly report of the Royal Agricultural Society. I was so struck by some of the statements, that I noted a few of them in my memorandum book. For instance, the writer quotes Law's treatise on roads, as stating that the power required to move one ton upon a railway, is 8 pounds. That is, as I infer, after a load is started it requires a traction power of 8 lbs. per ton to keep it in motion; on a level well laid pavement of hewn stones, the traction is 33 lbs., or four times as much; on a hard, McAdamized or Telford road, of best quality, six times as much, or 48 lbs.; on Flint McAdam, by which I infer one newly dressed with flinty stones, not yet compacted to an even surface, 65 lbs., or eight times as much, while on a common gravel road it requires 147 lbs., or sixteen times as much power as to move one ton upon a railway. That is, if one horse will move upon a railway a freight car with its load, which will often be 16 tons, it will require 16 horses to do the same upon a common road, and I presume this is true.

This is a strong argument in favor of good roads, and a strong one also, in favor of having iron tracks laid upon one side of the roadway along our most traveled country roads, over which heavy teaming is done. What a saving of horse-flesh it would be if we could double or treble the loads upon our market wagons! All that is needed is a railway track, with extra broad rails, so made that a wagon can be pulled on or off the track at any point.

The grade of a first class road, the writer states, should never exceed 1 foot of ascent or descent in 24 feet of length. Our roads are often 1 to 12, and sometimes 1 to 8. Of course traction increases rapidly with the grade. The traction, or severity of draft, is not alone felt by the beasts of draught, but through their action it is manifested upon the road itself. The horse's hoofs dig out a deep track where they travel, if the road is not frequently dressed. Traction is directly as the load; inversely as the diameter of the wheels.....On a paved, or hard McAdamized road, it is independent of the width of tires, *provided this exceeds* 3 *or* 4 *inches*..... At a walk, traction is the same with or without springs....On a hard road, traction increases with, and as the velocity, at all speeds above the velocity of 2½ miles an hour. (That is, I suppose, it bears a direct relation to the friction).....On soft roads traction is independent of velocity....The destruction of the road is at all times greater as the diameter of the wheels is less, and when no springs are used.

Now if springs or no springs on heavy vehicles seriously affect the road, what effect must their absence produce upon the wagons?

This is a matter, the importance of which I had little idea of, until it was recently forced upon my attention. Now, facts exhibiting the great good of springs upon heavy wagons, frequently force themselves upon my attention, e. g., wagons often pass my office, on the street, probably 60 feet away, with as heavy loads as two horses can draw, say 4 to 6 tons; some are on springs, and some are not. Those which are on springs make very little jar, the others shake the building, in fact nearly the whole block. When the solid ground, covered with four and five story storehouses is thus shaken, what must be the effect upon the wagon? It is an old law of mechanics that "action and reaction are equal," even our toughest hickory, and ash, and elm, cannot long stand the strain put upon them when they are required to jar the ground of a whole city, like a miniature earthquake.

Torsion Springs for Farm Wagons.

About a year ago I put under a new farm wagon which I had built, a set of the "Erie Torsion Springs," calculated to bear 3,000 pounds. I do not often haul more than one ton upon it, and up hill and down hill this is a fair load for light horses. So far, I am delighted with the action of these springs. They are so constructed that they can not "bump," there being a constantly increasing mechanical advantage given to the spring as the load is increased, so that although the elasticity is diminished by the weight, there can never be a jar. On rough, stony, or frozen roads, I can see a notable difference in the wear and tear of the vehicle, or rather in the strain to which it is subjected, and I find I can drive off without a load or with a light one, with comparative comfort at a brisk trot, although, of course, the springs are not intended to make it easier to ride in the wagon. They are in my estimation a very important invention, and are easily applied, without the aid of the wheelwright.

One of the paragraphs noted above, is to the effect that upon soft roads

"Traction is Independent of Velocity."

This seems strange, but it is precisely the result which was such a poser to the wiseacres of the Auburn Plow-trial, a few years ago. They found, if I recollect aright, that a plow drawn at the rate of four miles, or so, an hour, produced no greater effect, or even a little less, upon their accurate dynamometer, than the same one moving 2 to 2½ miles. The expression quoted is, I think, likely to create a misconception. Traction may be measured, we will say, by the strength of the trace-chains; thus, if they will move a wagon at the rate of 2½ miles an hour, over soft roads, they will draw it at the rate of 5 or 6 miles, and be subjected to no greater strain. This is all it means. The extra effort tells upon the horses, however. It is easy for a man to carry his 160 lbs. of flesh, and walk three miles an hour, but let him try to walk five, and he will find that though his weight does not increase, his labor does.

Wide-tired Wheels.

This is another point which we are very apt to over-look, greatly to our disadvantage. We suffer ourselves to be guided by wagon makers, and the wheelwright knows very well that he lives by his trade, and that wear and tear is the life of trade. He serves himself when we are suited with narrow wheels. A set of wheels with 4-inch or 6-inch rims and heavy tires, cost to make considerably more than a set 2½ inches wide; but an extra price is always put upon them. They are well worth it. A wagon or cart with a 6-inch tread, will take heavy loads over soft meadows and hardly leave a track, where a narrow-wheeled wagon with a similar load could not go at all. On country roads such broad-tread vehicles destroy ruts, and act like rollers, making the roads agreeable for light carriages, and keeping them in much better order throughout the year. It would be a real blessing to every State of the Union, to put so heavy a tax on narrow wheels upon heavy wagons and carts, that they would become quite obsolete. Millions of dollars would be saved to the people of each State, in repairs of roads, in repairs of wagons, and in horse-flesh.

Sparrows.

One of my neighbors and friends, who is a good farmer, though a Wall street lawyer, and one who thoroughly enjoys good horses, Jersey cattle, good poultry, and good crops, both in the fruit-garden and in the field, surprised me the other day, by advocating the cause of the detestible, chattering, English sparrows. I am free to confess that I may be prejudiced, but really I can not see much good in them outside of cities. Neighbor Clark says he shot one, and found its crop full of rose-bugs, and since that hour has venerated them. They do not quarrel with the bluebirds under *his* eaves. Their voice is no longer harsh and grating in *his* ears.

They are satisfied with even less fruit than *he* willingly devotes to them, and altogether they are a joy and a blessing to *him*. Well—if he can civilize and mollify this barbarous immigrant from the Old World's civilization, we may hope even for the regeneration of the slums of New York. Flocks of a hundred in the buckwheat fields were not uncommon last fall. Soon, I presume, we shall be netting them by the hundred at a cast, during the autumn, and there is one satisfaction connected with them, they are at that season as fat as balls of butter, and are said to be excellent eating, and nearly equal to reed or rice-birds. If all mankind are mistaken in supposing that they drive away other birds, we shall all be delighted, and give due honor to the discoverer of the fact. At all events, that they eat rose-bugs is sufficient to make any one regard them with friendly feelings, at least in June. For two years now we have had

A Fair Crop of Grapes.

A fact that I attribute solely to the absence of the rose-bugs. Some of the entomological people must have investigated the parasites of this insect, I think, but I have seen nothing published about it. The sudden disappearance of insect pests, when accounted for, is usually, perhaps always, found to be due to the attacks of some parasitic insect, which propagates itself in the body of the perfect insect, in the larva, or pupa, or which actually attacks and devours the pest in one or the other of its three forms of life, after it leaves the egg. If I knew this little benefactor, I would plant one grape vine in its honor, if not an acre of vineyard.

Dairy Shows.

Our Dairy Show at the Centennial was, by all accounts, as near a failure as mismanagement could make it, but the London Dairy Show at the Alexandra palace was a great success. Is it not worth while for our dairy people to make a move soon to have a June show of dairy products, processes, milch cows, and other milch animals, goats at least. I have spoken about it to a number of gentlemen interested in dairy matters, and find great unanimity in their wish that some such thing might take place. The American Dairymen's Association is really the fittest body to originate the movement and carry it forward.

Feeding Corn Stalks.

I have never, until now, been able to account for the different values various practical people put upon corn stalks. True, there is a great difference in different kinds of corn, in the way it is fed, etc., but after all, the great variation in value is caused by its dryness. That which is cured somewhat moist, even if more or less moldy, is greatly preferred by the cattle, to hard, dry, brittle stuff, which has lost almost all of its flavor, and doubtless a good deal of its nutritive qualities. Simply sprinkling the portions of stalks to be fed next, so that they will have a few hours to absorb the water, helps a great deal, but still it is not at all like having naturally moist fodder. If the water used to soften the stalks be salted, and flavored with a few handfuls of bran, this will make a great difference. No doubt the best plan to feed corn fodder, is to cut and steam it, with such additions of roots, bran, cotton-seed meal, etc., as are desirable. Few can do this; many, however, follow what is perhaps the next best plan—to cut the corn-fodder, and mix it with bran, then to pour scalding water in abundance over the mass, and cover it up with rubber sheets, or rubber army blankets, or place it in a box with a close lid, so that it shall have a good soaking and "sweating." In whatever way it is fed, it should be cut—the finer the better; but even if it be cut in foot lengths, every farmer will find his account in it. A large part of dry-fed stalks is rejected, and gets into the manure, where it is a great nuisance, first in getting it out, and then in clean culture. Those of us who can not afford to cut our corn-fodder fine, to have it "chaffed," as the English say—can at least be tidy enough to have it cut in six-inch lengths with a broad ax or a hatchet.

Reversion.—"Freaks of Nature."

A farmer showed me a curious instance of what he termed a "freak of nature"—as if nature had freaks. He had allowed a pure white Musk drake to run with some Aylesbury ducks, which had, of course, no colored feathers in them. The progeny were the most piebald, and the ring-streaked-and-speckled-est flock of "mongrels" that I ever saw. The cross brought out the hidden color, and was as clear a demonstration, as one needs to have, of the fact that there were black or colored ancestry on one or both sides. In quite a similar way we get sometimes most unexpected results in breeding—not freaks of nature—but according to laws which perhaps we do not always understand, and which form a most important subject of study. Is there a college in the land, agricultural or other, that has as yet an established chair of "Zoötechny?" The principal European schools are establishing such professorships, to teach the laws of life and of breeding. What is more important, practically, to our country? The live stock interest is the most important one connected with our agriculture. The sale of raw products is directly exhausting to the land. The sale of beef, mutton, wool, horses, and pork, indirectly so, but vastly less so. And the arts of propagating fish, oysters, and everything up to Short-horns, are too important to be left to the empyrical practice of unscientific men. The field seems to me to be as inviting as chemistry was fifty years ago, and as little worked.

Stock for Butter.

BY CHARLES S. SHARPLESS, PHILADELPHIA, PA.

The time is rapidly approaching when the quality of Jersey stock, as determined by the butter yield, must be put on record. By the butter, because a large yielder of milk may be small of butter, but a large yielder of butter can not be small of milk. In this view, the most important feature of the herd is, the *butter quality* of the bull. A bull whose daughters will yield 7 lbs. of butter (on grass alone) at two years old, is good; one whose daughters will yield 8 lbs. is better; one whose get will yield 9 lbs., is the best; but one whose daughters will yield 10 lbs., is to be classed as "A. 1," and should be secured without regard to color or black points. Take three 2-year-old heifers, the get of three different bulls, and place them in the same field, all having the same food. One allows the food to pass through her, without abstracting either fat for the ribs, or butter for the udder; the second becomes fat, while but little butter goes to the udder, but the third inherits a quality that enables her to abstract from the food, not fat for the ribs, but butter for the udder, from 7 to 10 lbs. per week. These latter constitute the butter strain; it can exist in a cow and disappear in her daughter; it can be wanting in a cow and appear in her daughter; in both cases caused by the quality inherited from the sire. Hence the absurdity, without regard to quality, of solid color or black points; we must have butter *first*, and fancy points afterwards. The opposite course has been productive of the many wretched failures everywhere apparent. It is in these respects that we see the necessity of reliable records of butter yields. The horsemen have meetings of 3-year-olds, and 4-year-olds, and the opportunity is afforded the public of timing them. As to heifers and cows, we have the statements of cow-men and owners, sometimes sworn to before Justices of the Peace, as to yields; some feeding grass only, some having 4 to 6 quarts of meal per day, some feeding all the meal the cows will eat, and some saying nothing about the feed, and none ever stating the weight of the animal.

What we need is, that the American Jersey Cattle Club shall select some reliable man, whose farm is centrally situated, to whom all Jersey cows competing for a record, shall be sent for trial. That all trials should be on grass alone; that the weight of the cow shall be stated, and her yield of butter per week shall be published in her Club Record.

This would tend to the increase, and spread of, the best butter animals, and to stop the perpetuation of the indifferent and worthless. It would save thousands of dollars, directly and indirectly, to the public, and specially to those who are willing to, and can economically pay large prices for animals, if assured of their butter quality.

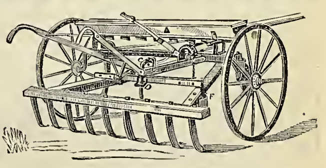
I take as a high standard for 2-year-olds, 9 lbs., for 3-year-olds, 10½ lbs., for 4-year-olds, 12 lbs., for 5-year-olds, 13 lbs., and for 6-year-olds, 14 lbs., on grass alone. I know such animals can be forced beyond those yields, and where larger yields have really existed, such forcing has taken place. But there can be no comparison so fair, so uniformly reliable, and so little calculated to injure the cow, as that based on grass alone. There is another point, very important, viz: the butter yield, say six months after calving. The cow that is a large yielder when fresh, but whose yield decreases rapidly, may be of less value than one whose yield is smaller at first, and falls off but little. A fair proportion to decrease in the first six months, would be, say one-third, so that a 12 pounder might fall to 8 pounds, or a 9 pounder to 6 lbs., in this time.

The percentage of cream increases rapidly as the yield of milk is reduced; therefore, when the percentage of cream is stated, with it should go the number of quarts of milk per day.

Now as to weight; 10 lbs. is as much butter for a cow weighing 700 lbs., as 15 lbs. is for one weighing 1,050 lbs. Jersey cows vary from 700 to 900 lbs., there are a few that, no doubt, would weigh 1,000 pounds. We must ever keep in mind that, other things being equal, the 1,000 pound cow will require more feed than the one weighing 700 lbs., perhaps as much more in proportion, as the difference in weight would indicate. A lengthy, apparently large cow, sometimes will weigh no more than one apparently smaller, but with more capacious body. The most economical cows are those on short fine legs, with neat heads and necks, but with large, full-ribbed, capacious bodies. Such have good constitutions, are easy keepers, and recuperate quickly from a reduced condition, and such, other things being equal, are the greatest butter producers for a given amount of feed.

Hoeing Wheat Crops.

In Europe, the wheat crops are always hoed, either by hand or by horse-hoes. There labor is cheap, and the hand-hoeing and weeding of an acre of wheat costs but a trifling sum, while the return in the increased crop is very considerable. The average yield of wheat in England, for instance, is twenty-five bushels per acre, or equal to our best crops. The largest crops reported in England appear fabulous to us; 64 to 68 bushels per acre being looked for by the best farmers, as a fair yield, and anything less being considered a poor crop. Upon our richest land, the crop is much lessened by weeds, which we can not afford to destroy by hand, and we have no horse-hoes. A partly effective remedy is found by harrowing the wheat early in the spring, but when the growth has reached a certain point, the harrow can no longer be used. Hoes could be used, where the wheat has been sown in drills, long after the time for harrowing has passed. It is now certain that we must use every possible appliance to increase our crops, or else our profits must diminish. The tendency of values, all over the world, is still downwards, and the era of high prices seems to have passed away for the present. The period of its return can scarcely be predicted from present appearances, and an interval of many years of moderate prices may elapse, unless some unforseen event may occur to hasten it. In the meantime, we have a large scope for the improvement of our methods of farming, and increasing the yield of all our crops, but especially of the wheat crop.



TRAVIS' WHEAT HOE.

It is useless to make the land rich with fertilizers if we grow weeds instead of wheat. We must, therefore, cultivate the ground, and destroy the weeds that would otherwise destroy the wheat. The horse-hoe, by which the soil between the rows can be disturbed and loosened, is the proper implement for this purpose. This is a new implement with us, and it is probable that a few attempts at its introduction may at first fail. The only American implement of this kind shown at the Centennial, was one from Michigan, exhibited by the owner and inventor, Mr. A. B. Travis, of Brandon, Oakland Co., Mich., who has experimented in hoeing wheat for 15 years, with the result of producing the implement which we illustrate. The inventor writes that he has not as yet received one dollar from his invention, and as his patent expires in two years, he has small hopes of gaining anything from it, further than the satisfaction of helping to introduce a much needed improvement in wheat culture. The machine has received a medal at the N. Y. State Fair, and a diploma from the Franklin Institute. Mr. Travis offers to send a circular with full information for manufacturing the machine, and give the free privilege of making one for experimental purposes, to any person who may apply to him. He has at last made arrangements for manufacturing them, and it is to be hoped that at least the conductors of the experimental farms in the country will test the machine, with a view to their permanent use, if satisfactory, and if not, with an effort to improve it until it can be made useful.

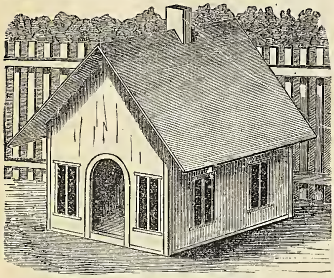


Fig. 1.—A NEAT DOG KENNEL.

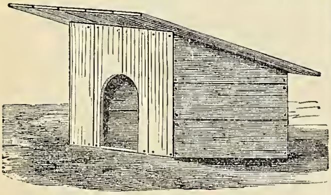


Fig. 2.—CHEAPER KENNEL.

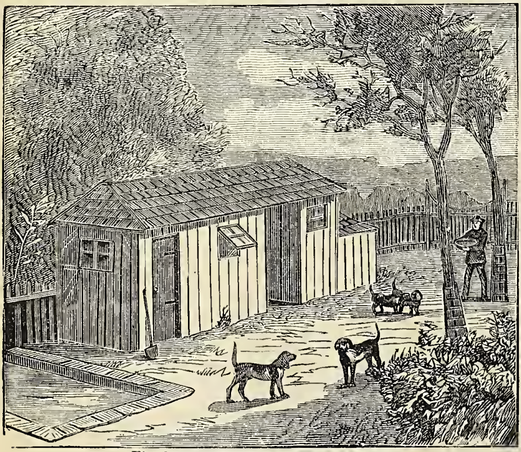


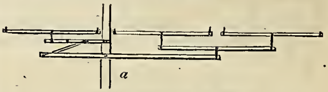
Fig. 3.—KENNEL WITH YARD FOR DOGS.

Dog Kennels.

In many cases, where dogs are kept, they might very well be dispensed with as worse than useless. When really of service, they deserve to be properly fed and comfortably sheltered in a kennel, placed where their watchful care is needed. Here they should be fastened at night, so that they may not be roaming abroad when they should be on the watch at home. The manner of making a very neat kennel is shown in figure 1. The bottom is 2½x4 feet, and from the bottom to top of roof 3¾ feet. The door-way has an arched top and should be of any size from 8x12 inches, up to 12x22 inches, to suit the size of the occupant. It is painted a light brown, with the corners, base, and window planks painted darker. Brackets may be placed beneath the cornice molding. A cheap and equally serviceable one is shown in fig. 2. It has a floor the same size as the preceding, it is 3¼ feet high in front, and the roof has a fall of 8 inches. A yet cheaper one is made by taking a square box, 2½ by 3 or 4 feet, and cutting a door in one end. During winter, if the kennel be in an exposed situation, tack a piece of heavy carpeting over the door on the inside, so that it will cover the entire doorway. Where several dogs are kept, a roomy kennel and yard should be provided, in which to confine them. The disrepute into which these animals have deservedly fallen in the estimation of sheep and poultry keepers, and gardeners, is greatly owing to the liberty given to them by their owners, of wandering about and depredating. If the owners of dogs would provide a safe place for them, and confine them there when not at work, very little injury would be done. A dog-yard and kennel is shown at fig. 3. It is roomy, so as to admit of exercise; well shaded, and is furnished with water, and a sleeping house. A water tank is indispensable, and generally there should be a bathing tank and water for drinking besides.

A Three-Horse Evener.

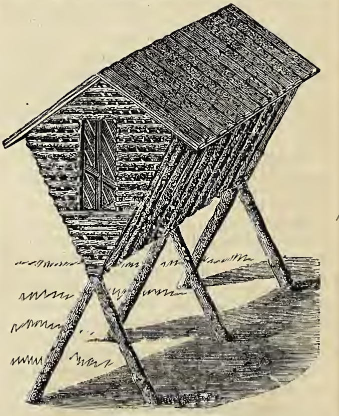
"L. F. P.," Salina, Kansas, sends a sketch and description of a three-horse evener, which he has used upon his reaper, thinking, however, that sometimes the one horse had to draw the most. To show that this must be the case, and the manner in which the evener is wrongly constructed, we give an engraving of the sketch. It is intended to be used upon a tongue, shown at *a*. The evener, 4½ feet long, is attached to the tongue in the usual manner, at a point which is one-third the distance from one end, leaving one part twice as long as the other. The two horses are hitched to the long end. The single horse is hitched to a bar 18 inches long, which is bolted to the tongue in advance of the evener. This bar is connected with the short end of the evener by a pair of iron straps, which are bolted to the evener and to the bar at a point 6 inches from the hammer-bolt, and 12 inches from the outer end; thus giving the horse the advantage of two to one in drawing from the outer end of the bar. At least it seems so; but it is not so really, because the straps are placed diagonally, and there is a considerable loss of power in drawing in this way, which is exerted in pressure upon the connecting bolts. But what is a more important error, the two horses have the advantage of double the length of the evener that the single horse has, thus making the draft in their favor equal to 4 to 1. Then as the single horse gains double his draft, that reduces the gain of the two horses one-half, and makes it equal to 2 to 1 as against the single horse. Thus the single horse draws against the two horses, without any benefit from the complication of levers. The suspicion as to the unequal draft is therefore a realty. To make two horses draw upon one side of a tongue, against one on the other side, without doubling the length of the double-tree upon the side of the single horse, or without producing a side draft, or an unequal draft, does not seem to be possible. If it can be done by any combination of adjusting levers, we should be glad to know of it from any of our readers.



ARRANGEMENT OF EVENER.

A Rustic Corn-Crib.

When visiting the farm and grounds of Mr. J. Hull Browning, of Tenafly, N. J., recently, we noticed a very picturesque corn-crib, made of cedar poles and bark, which is represented in the accompanying illustration. It is not intended for an ordinary farm, but for a country place, where the necessary ugliness of the usual corn-crib may be substituted by a very pretty and picturesque effect, without interfering with the usefulness of the crib. The crib is supported by pairs of stout poles, set in the ground; each pair being jointed, and bolted firmly together, where they cross each other. A sufficient number of braces and girts, to strengthen the crib, are used, and it is covered on the sides and ends with split poles of cedar. The roof is covered with bark. If the materials are well selected, a very ornamental and unique structure is the result, and the corn-crib may be made a prominent object in the yard, instead of hiding it away, as is often done, behind an outhouse or shed.



A RUSTIC CORN-CRIB.

Spreading Manure.

The winter is a good season for spreading manure. It is immaterial whether the ground is covered with snow or not, or whether it is frozen or soft, provided it is not too soft to draw loads over, and that the ground is not upon a steep hillside, from which the manure may be washed by heavy rains, or by sudden thaws. We have spread manure upon our fields several winters, and always with advantage, not only in saving labor and time, but also to the crops grown after it, more especially to oats and potatoes. In spreading the manure, it is the best to drop it in heaps, leaving it to be spread by a man as soon as possible afterwards. This may be done most readily by using a manure hook, (figure 1), with which the manure is drawn out of the sled or wagon-box. Sloping wagon-beds are used for hauling various heavy materials, and why should they not be used for this, the heaviest and most bulky load a farmer has to handle? A wagon, having the box raised, (figure 2,) so that the forward wheels would pass beneath it, would be very convenient on a farm. It could be turned in its own length, and handled with vastly greater facility than the ordinary farm-wagon, which needs a large yard to be turned in. Such a wagon could be unloaded with great ease and very rapidly, by the use of the hook, and in case it was desired to spread the load broadcast from the wagon. that could be done perfectly well. But to do this keeps the horses idle the greater part of the time, and is an unprofitable practice. Two teams hauling will keep one man busy in the yard helping to load, and another in the field spreading; the work will then go on without loss of time. In dropping the heaps, they may be left in rows, one rod apart, and one rod apart in the row; each load being divided into eight heaps. This will give twenty loads per acre. If ten loads only are to be spread, the rows should be one rod apart, and the heaps two rods apart in the rows. In spreading the manure, it should be done evenly, and the heaps should not be made to overlap. If there is one heap to the square rod, it should be thrown eight feet each way from the center of the heap, covering a square of 16½ feet, as shown in figure 3. One heap then is made to join up to another, and the whole ground is equally manured. There is more in this point than is generally supposed by farmers, many of whom are careless and wasteful in this respect, giving too much in some places, and too little in others. The consequence is uneven growth over the field, rusted grain or perhaps laid straw in some places, and in others a half-starved crop. Another important point in spreading is, to break up the lumps, and scatter the fine manure. Unless this is done, the field can not be evenly fertilized. There is work about this, which would tempt some hired men to neglect it, but it should not only be insisted upon, but looked to, and its performance insured.

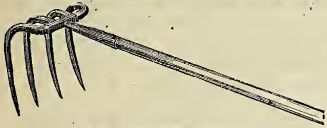


Fig. 1.—MANURE HOOK.

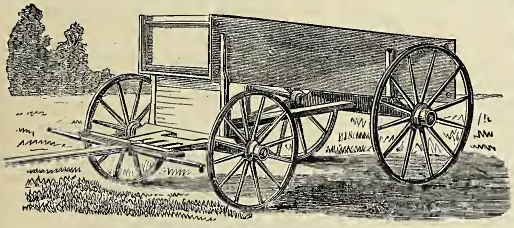


Fig. 2.—WAGON WITH RAISED BOX.

Fig. 3.—MANNER OF SPREADING.

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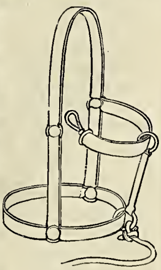
A Convenient Halter.—"C. P. B,," Rockford, Ill., sends a sketch of a halter, which fastens by a snap-hook, so that when the buckle has once been properly adjusted to fit the horse's head, it needs no unfastening afterwards. The illustration, made from the sketch, shows the manner of making the halter.

◆

Early Chickens.—Probably nothing that can be raised on the farm can be made more profitable than early chickens. "Broilers," as they are called, or chickens of one pound weight, or thereabouts, retail in the city markets all along the spring and early summer at 75 cts. each. To sell a two or three months old chicken for the price of a first class mature fowl, cannot fail to be profitable. Those who are aware of this fact occupy themselves in raising early chickens. But as winter is unfavorable for the rearing of these tender creatures, artificial mothers must be employed. Natural methods fail at this season. Eggs can be hatched, it is true, but artificial warmth is needed for the chicks. An artificial mother must be employed. Recently we described and illustrated one of these contrivances. Many persons, experienced in poultry matters, are using incubators, and many inquiries come to us in regard to them. We are satisfied that any careful person can easily hatch and rear chickens during the winter season, by the use of an incubator, and an artificial mother, in a room heated by a stove. We saw young chickens raised in a warm room in January of last year, which were as healthy and thrifty as any. The cost of raising them at that season is certainly greater than in the summer, but there is actually less loss, the growth is more rapid, and when they are ready for market, their value is several times greater, and all these advantages compensate for the greater expense.


HALTER.

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Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.,

Harness Hooks.—A very neat and cheap harness hook may be made from the end of a plow handle, beveled as shown at *A*, figure 1. When working up the tops of oaks, or other trees, natural hooks can be procured that need only a little trimming, as shown at *B*, figure 1—these hooks may be nailed on to a beam or girt. At *c*, fig. 2, is one made from a piece of an inch board, 1 foot in length, 4 inches wide, and shaped as shown. It may be nailed on to a block, and that nailed to some part of the building, or fastened directly to the side of a post. The one at *d* is made of iron; the lower hook projects 7 inches, and the upper one 1 foot, with the hook or holding part near the end—the lower one is for the harness, the upper one for the bridle and collar, which are used first in harnessing. Where there is room, the hooks shown in figure 3 may be used. The heavy hook is for the harness, the small one for the bridle, and the other for the collar; the two small ones may be placed lower than the large one. By this plan the bridle and harness is not pulled out of shape by one hanging over the other, and one can use the harness without removing the collar and bridle.

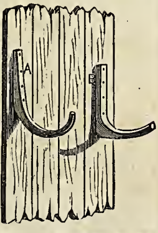


Fig. 1.—HARNESS HOOKS.

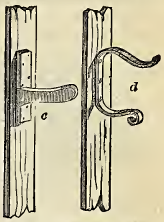


Fig. 2.—HARNESS HOOKS.

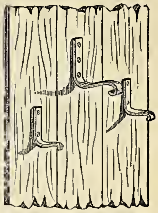


Fig. 3.—HARNESS HOOKS.

Fencing Straw Stacks.—Oat and barley straw has considerable value for stock feeding, and farmers should practice great economy in preserving and spending it. It is not often possible to put it all under cover, and it is necessary to stack it. If there is not a properly arranged stack yard, the stacks may be protected by building fences or pens around them. These should be safe as well as substantial, for sometimes valuable animals have been injured or killed, by running against the ends of projecting rails. In Western New York, the log pen style of fencing, as shown in fig. 5, is extensively used. The logs are from eight to twelve inches in diameter, and from twenty to forty feet in length. They rest upon blocks of wood twenty inches in diameter, and the same in length, set upon end. The straw stacked in this pen is fed out in sections by cutting down with a hay knife as needed. The same quantity of straw, thus used, will go twice as far in feeding, as if cattle were allowed to pull it out and trample it under foot; besides the danger of losing an animal or two by the stacks upsetting when partly undermined, and during one of the heavy blows of winter, is avoided. For a portable fence, or in a section where rails are more convenient than logs, the plan shown in fig. 4, will answer a good purpose. The pen may be square or any desired number of rails in length, or in circumference, and from five to seven rails in hight. Stakes are driven firmly into the ground, at each corner, and wired as shown. The ends of the rails are sawed off, and strips of board are nailed over

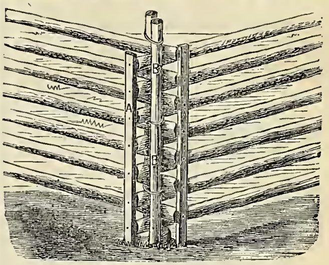


Fig. 4.—A SAFE STACK FENCE.

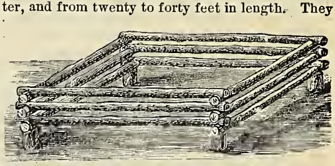


Fig. 5.—LOG-PEN FOR STACK.

the ends, so there will be no possibility of animals injuring themselves by their rough and sharp points.

Making Wooden Eave-troughs.—Eave-troughs should be attached to all buildings, not only as a preservative of boards, timber, etc., but as a matter of convenience. Many who do not wish to go to the expense of tin eave-troughs, may make troughs of straight saplings of pine, chestnut, or cedar, and can in a few days' time, during the leisure of winter, make enough eave-troughs to supply a farm. A round straight stick from 15 to 40 feet in length, from 4 to 6 inches in diameter at the but, and 3 to 5 at the top, is readily converted into a trough. First, strike a chalk line, and hew a little over one-third of the stick away from the straight side; then place the flattened side up on the trestles. On one of these I nail, at each side of the trough, a block the same hight as the trough, and over the top place a strip, nailing it fast to each block and the top of the trough. Any one skillful with the adze, can dig out a trough very fast, but others can do better with a common ax. The finishing is generally done with a 2-inch chisel or large gouge. The manner of attaching the troughs to a building, (shown at figure 7), is by a board bracket made to fit the outside of the trough; this is nailed to a cleat, which in turn is nailed to the side of the building. A piece of pine 10 inches long, 1 inch wide, and ½ an inch thick, is nailed to the upper edge of the bracket and over the trough, to hold it in position. When finished it should be seasoned thoroughly in the shade, and be painted two coats both inside and out.

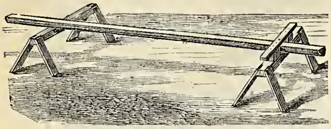


Fig. 6.—MAKING AN EAVES-TROUGH.

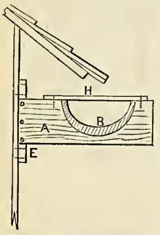


Fig. 7.—BRACKET.

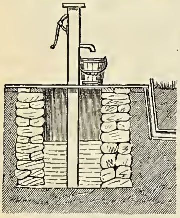


Fig. 8.—PUMP DRAIN.

Kitchen, Pump, and other Drains.—The common method of disposing of the kitchen slops, which is to throw them upon the ground about the back door, is a very unwholesome practice, and productive of much disease. It is but a few hour's work to construct a drain by which all the waste may be carried off. A wooden box, 18 in. square, and about 2 ft. deep, is set into the ground near the kitchen door, and filled in with round stones from 1 to 2 in. in diameter; an outlet pipe, 2 or 3 in. in diameter, square or round, and of either wood or metal, is fitted to the bottom of the box, as shown at figure 9. This is intended only for water, vegetable refuse should find its way into the pig-trough. A drain for the waste of a pump (fig. 8) is made thus: at the lower edge of the platform, in front of the pump, is placed a funnel-shaped wooden box, about 6x10 in. square at the top, and 4 in. square at the bottom. This is connected with a wooden discharge pipe. The waste from the pump is carried off by this pipe, and the ground kept dry.

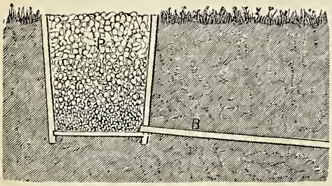
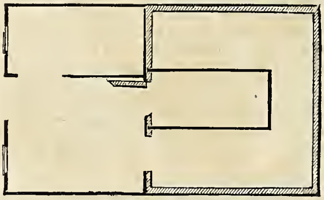


Fig. 9.—DRAIN FOR KITCHEN SLOPS.

Ventilation of a Closet in an Ice-House.

A correspondent in Colorado sends the description of a meat-closet, which he contemplates making in the center of an ice-house, so that it will be surrounded with ice. The proposed refrigerator is shown in the accompanying engraving. The trouble is with respect to ventilation. This is a difficult matter to provide for, as a current of air, passing through the closet, will cause a considerable waste of ice, and will moreover introduce much moisture into the closet, where it will be condensed. The effort should be made to keep the air in the closet as dry as possible, as moisture greatly hastens putrefaction of animal substances, and dry air preserves them. A ventilating pipe may, therefore, be made to pass out from the top of the closet, but should be kept tightly closed, excepting when its use is imperatively required, when it may be opened on a cool night. At other times the moisture in the closet should be absorbed by the use of charcoal or fresh lime, hung up in a bag of some open fabric. The charcoal may be freshened occasionally by by drying it and baking it in a hot oven.


PLAN OF CLOSET IN ICE-HOUSE.

The Marks of a Good Milk Cow.

To know how to select a good cow is a necessary part of the education of a farmer, and more especially of a dairyman. A competent judge of a cow should be able to select at sight the best milkers from a drove, and the points in which such cows differ from others, are so marked and conspicuous, that it should be very easy to know them. The head is the first thing that attracts notice. In a good cow this should be fine in the muzzle, deep in the jaw, broad between the eyes and between the jaws, and with large nostrils. The eyes should be large, mild, bright, and active, but not nervous and restless, and the membranes should be bright red and full of blood. The ears should be deep yellow inside, and the waxy secretion should be plentiful, and of a deep yellow color. The horns should be fine and thin, yellowish in color at the points, and very clear and waxy in the texture of the surface. The neck should be slender and tapering, with a capacious windpipe; the dewlap should not be prominent or fleshy, and the point should show a yellow color. The chest should be broad and roomy, giving plenty of room for the play of the lungs, but not deep. The chine should be thin, and the back level, widening out across the hips, where it should be broad and flat. The body should be deep in the belly, gradually tapering from the shoulders backwards; the ribs should spring out well from the backbone, and there should be ample space between the last rib and the hip. The shoulders and thighs should be thin and narrow, the legs fine in the bone, and not of great length; the hoofs should be clean and clear, with a waxy surface. The pelvis should be broad, and the tail should be set pretty high above it, lying well down between the prominent bones, and should be thin and long, reaching down near to the ground. The udder should be large, loose, and squarely formed, with the teats placed well apart from each other, should come well forward and well up behind, where, when empty, it should hang in loose folds. The milk-vein should be large, and also come well forward; the veins of the udder should be abundant, the skin a deep yellow color, and covered with short, soft, fine hair. The teats should be long, and of such a size that they can be handled in milking with ease, the milk should flow readily, and with gentle pressure. The skin of the whole body should be loose and elastic, of a yellow color, and covered with abundant soft, silky hair. The color of the hair may be ignored, as a general rule, although we have found cows that have been the darkest in color, have given the richest milk; this, however, seeems to be a point that has not yet been determined. The escutcheon is a point that is greatly dwelt upon by many experts in dairy matters, and as some distinct inquiries have been made about it, we refer to this at length with our most recent observations. The "escutcheon" is the reversed growth of hair that is found upon nearly all cattle, from the thighs and udder, upwards. The peculiar form of this escutcheon, or "milk mirror," is supposed to denote the value of the cow as a milker, both as to the quantity yielded, and the continuance of the yield. It was discovered by a Frenchman, M. Guenon, a dealer in cattle, who had observed the differences in the forms of the escutcheons of a great number of milch cows, and the corresponding difference in the milking capacity of the animals, and he attempted to reduce these differences to a system. His discovery was tested many times in France, and in recognition of its value the French government, about 40 years ago, conferred a pension upon him. Since then a good escutcheon has been considered as one of the characteristic points of a good cow. A full description of M. Guenon's theory, and the rules for judging cows by it, which he built up after many years study and observation, is given and amply illustrated in a book entitled "Guenon on Milch Cows," published by the Orange Judd Company.

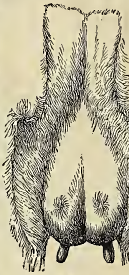


Fig. 1.
GUENON'S ESCUTCHEON.

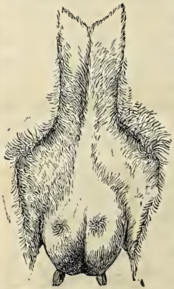


Fig. 2.—BOYDEN FARM COW.

Mr. Guenon divides the escutcheons into eight classes, each of which is characterized by a different form, and each class is divided into eight orders; these orders being graded from best to worst, as the peculiar class of escutcheon decreases in size or degenerates in character. The first order of the first class escutcheon is given in figure 1, as it appears in the book referred to. This is taken to be the mark of the best milk cows, which yield over 20 quarts of milk per day, and never go dry if they are continuously milked. As the quality of the cow decreases, the size of the escutcheon diminishes. From many observations of premium milk cows, exhibited at the State fairs for some years past, we have found the escutcheon to be very variable, and in few cases to approach the classification of M. Guenon. For instance, from amongst all the cows exhibited at several State fairs in 1874, as large milkers, we could only select one whose escutcheon came near to the standard to which it ought to belong. This was in the case of a cow exhibited by the

Boyden Farm, Irvington, N. J., which was said to have milked 6,500 quarts in 347 days. The escutcheon of this cow, given in figure 2, is taken from a sketch made at the time she was exhibited. At figure 3, is given the escutcheon of Maggie Stewart, a prize Ayrshire cow, imported from Scotland by Mr. Wm. Crozier, Northport, N. Y., whose portrait was given in the *American Agriculturist* of January. This cow milks 26 quarts when fresh, and, if permitted, will continue to milk until she calves. We have found many other good escutcheons upon first class cows, but many more first class cows having escutcheons that do not come up to the standard. In grades, the failures are most numerous, and while the truth of Mr. Guenon's theory may be conceded to some extent, as regards cows of a pure and distinct breed, yet as regards cows of mixed blood it is doubtful. On the whole, it may perhaps be safe to conclude that if the escutcheon is possessed by a cow having all the other marks of a first class milker, it is to be taken as additional testimony as to her capacity, but the escutcheon alone, in the absence of other marks, cannot be depended upon. Nor is a cow, that possesses all the other marks of good character, to be rejected solely because the escutcheon is not of the first class or order. Those who would study this subject, which cannot be presented in full or in convenient form in a journal, are referred to M. Guenon's book, with the title above given.

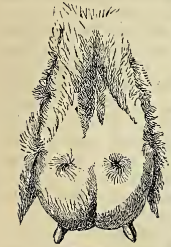


Fig. 3.
MAGGIE STEWART.

Plan for a Poultry-House.

The plan here given, for which we are indebted to J. M. N. Reed, Erie, Pa., is arranged for keeping two different breeds of fowls. The elevation is shown at figure 1, and the ground plan at figure 2. It is 8 x 20 feet on the ground, 10 feet high in front, and 7 feet in the rear; it is divided into two roosting and laying rooms each 8 ft. square, and a room for sitting hens and collecting eggs, 4 ft. by 8. These apartments are separated from one another by slatted partitions, and communicate by means of a door placed in each partition, just over the boxes, the top-board of the nests being used as a step to the door. The open work partitions allow the free passage of air to all parts of the house. There is a window in each roosting-room, of six 8 x 10 panes of glass; a small sliding door opens from each room into the yards. From the sitting room there is a door two feet wide, opening to the middle yard, where the young broods are confined. This yard should be made close, to prevent the chicks from getting out; it should also have laths over the top, to prevent cats from getting in. Two roosts run the length of each roosting-room, and two others should be placed low down in the sitting-room, out of the way of the doors, these latter roosts which are not shown in the plan, are for the young chickens to roost on before they are old enough to be put with the other flocks. About six inches below each roost is placed a board one foot wide, with strips tacked on the edges, projecting two inches above the upper side of the board, to catch the droppings, thus securing a clean place to feed the fowls in winter, and for them to scratch in. The nests consist of two boxes, each 8 feet long, 14 inches wide, and 18 inches deep, and divided into 8 nests. These are placed along each partition inside of the sitting-room. Figure 3 shows the manner of constructing the nests; a board nine inches wide is placed along each side of the box, leaving an opening 9 x 11 inches on each side of every nest, one opening into the laying-room, the other into the sitting-room, one of these is always closed by means of a sliding door. When the hens are all laying, the nests are kept open towards the laying-room, but when a hen broods, the door of the nest she occupies is changed to the other side, thus separating her from the others without disturbing her. Eggs are collected from the sitting-room by raising the door of each nest. This manner of constructing the nests is an excellent one, although not new.

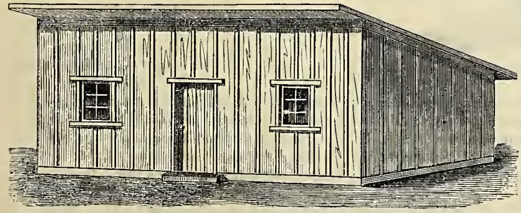


Fig. 1.—VIEW OF POULTRY-HOUSE.

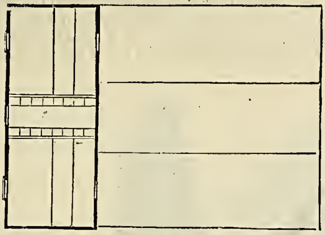


Fig. 2.—PLAN OF POULTRY-HOUSE AND YARDS.

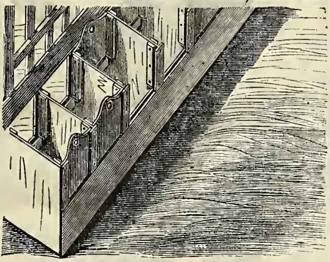


Fig. 3.—ARRANGEMENT OF NESTS.

A Useful Forage Plant—Durra—Sorghum.

The plant we are about to describe is far from being new to this country, but it is quite as important to point out a new use for an old plant, as it is to introduce an entire novelty, and we hope at the same time to clear up some of the confusion of names by which it has become surrounded, in part the result of accident, and in part by persons who would sell an old plant under a new name. As the most appropriate among the several common names of the plant, we select *Durra*, for reasons to be given presently. Botanically it is *Sorghum vulgare*, probably a native of Africa, but it has been in cultivation, especially in Eastern countries, so long, that its origin is not certainly known. *Sorghum vulgare* is a remarkably variable species, nearly as much so as Indian Corn—indeed in some respects more variable. For though the Maize differs wonderfully in size and color, its uses are the same, while Sorghum, having been long cultivated for quite different purposes, presents distinct races, that are grown for distinct uses. Thus in Africa, and parts of India, it is cultivated for its grain, which is largely consumed as food, and some tribes or communities depend largely upon it for sustenance. It has also been cultivated for food in southern Europe, and other warm countries, as "Indian Millett," and under other names, and a number of grain-bearing varieties, differing in the size and shape of the head, and color of the seed have been the result. In China, and Cochin China, where rice forms the chief farinaceous food, Sorghum was little needed for its grain, but attention being directed to the sweet juice of its stalk, it was cultivated to develope its saccharine qualities only, to the neglect of the grain, hence several sugar yielding varieties were in time established, the number of these increased still more in the islands of the Pacific, and in Africa also several of these sweet stalked varieties are known. A number of these sugar, or rather syrup-yielding Sorghums, have been introduced into this country, and are still more or less cultivated as Sorghum or Sorgho. Still another race, or set of varieties, valued for neither their grain, nor their sweet juice, but solely for the long, fine, elastic branches to the flower cluster, are known as Broom-corn. In the grain bearing Sorghums, the branches of the panicle or flower-cluster are but little over an inch long, and these are stout and thick, to bear the weight of seeds, while in the finest broom-corn, these reach a length of 20 inches or more, and very slender. Where the selection and cultivation with a view to develop this peculiarity first commenced, is not well known, but this country has done much to improve it, and the Broom-corn of the present day is greatly superior to that of 50 years ago, a marked change having been wrought in the plant within the observation of many now living. Many of our readers may find it difficult to conceive that the Indian Millett, the Sugar Sorghum, and Broom-corn, are all forms of one and the same plant; botanists have endeavored to separate them, and to make three or four species; there is much confusion in regard to them in the older botanical works, for the reason that there are no good distinctions by which to separate into several species what are really but one. It is true that the three races are unlike, perhaps more in uses than in appearance, but not so much unlike as the kale, cabbage, cauliflower, and kohl-rabi, which people generally accept as being merely forms of the same plant. Leaving the Sorgho and Broom-corn varieties out of the question, we would call attention to the grain producing form, which besides "Indian Millett," has also been called "Great Millett," "Guinea-corn," "Negro Guinea-corn," and "Chocolate-corn," for English names; it has also a set of African names: "Durra," "Doora," "Doura," "Dora," "Dana," "Jowaru," and "Jondla." As the plant is likely to attract some attention, we prefer—among all these names—to call it Durra. There are already two well known millets, which make confusion enough with the name, without adding a third. "Guinea-corn" has already been confounded with "Guinea-grass," a related, but entirely different grass. "Durra," either by itself, or "Durra-corn," is a name already known for the plant in some localities, and one to which we see no objection. We prefer simply Durra to Durra-corn, as we can see no need of two names when one will answer.

Durra, like Broom-corn, varies in hight with the richness of the land; under favorable circumstances growing from 10 to 15 feet high. It is more thickly furnished with foliage than the Broom-corn varieties, and the leaves are so like Indian corn that it is difficult to tell them apart. The flowers, and seed, are borne in a single panicle, or cluster, at the top of the plant; this differs somewhat in shape, in some being cylindrical, in others pyramidal; it is sometimes exceedingly close and compact, and in others more open and loose, usually about 6 inches long and 2½ inches through the largest part. In one variety, known in Europe, the head in ripening bends directly downwards. The engraving shows the general habit of the usual form of the plant. As the structure of the flower cannot be well described without detailed analyses, it is sufficient to say that it it is like that of Broom-corn. The grain is small and roundish, and it is of a dead white, reminding one of pearl-barley; in some varieties it is yellowish or even brownish. The grain, while it is much used as food in some countries, is regarded as less nutritious than most grains, from the lack of albuminoids.

For the past two years there have been discussions in the Southern journals, concerning the value of Guinea-corn and Guinea-grass as forage, the correspondents evidently talking about different plants; the writers often not knowing that they were describing different things, often found themselves in much confusion, but as it was apparent that the term Guinea was prefixed to one, if not two, valuable forage plants, and that there was a Guinea-grass or Corn different from the plant we had collected in Georgia as Guinea-grass, we took measures to get at the facts in the case. Quite unexpectedly, Mr. David Reid, of Pensacola, Fla., but at present in Washington, sent us specimens of both plants, though he made no confusion of names, one being marked "Guinea-grass" and the other "Durra"; the latter is the "Guinea-corn" in question. As the Durra, *Sorghum vulgare*, is now attracting attention as a forage plant in the Southern States, we requested Mr. Reid to give us his method of cultivation. He sent us a very full account, and is very enthusiastic over his success with it; but he wishes it to be understood that he speaks of it only from his experience in Florida, and does not wish that accepted as an indication of its value in northern localities. How far North it may be found profitable, or if it may successfully compete with Indian Corn as a forage crop, can only be decided by experiment. We abridge Mr. R.'s notes: For the best results, Durra needs a warm and rich soil; the land should be well prepared, and liberally manured; it is then laid off in beds, to allow of surface drainage, and the seed sown in drills, which are from 2 to 3 or 3½ feet apart; the poorer the land, the more room must be given; on rich soil, the drills are as close as can be worked with a cultivator; the seeds are dropped at 3 to 4 inches apart in the drills. Like Sorgho and Broom-corn, the seed is slow in germinating, unless the soil is warm, and the young plant so small, that it might be mistaken for a spear of grass. When young, it needs careful working; any method found useful for Broom-corn will answer for this, but while the plants are young, they must be kept free from weeds, by the use of hand-hoes and weeding; after the first clearing, the crop receives the same treatment as Indian Corn, and as with that, the weeds must never get the ascendency. When the plants are 6 to 10 inches high, and have begun to throw up suckers, of which each plant forms a bunch of four to six, they are thinned to 8 to 10 inches between the bunches. At this time, any vacant spaces from failure of seed to germinate, may be filled by transplanting from spots needing thinning. Mr. R. states that it pays to utilize all the thinnings, by setting them in prepared rows, thus transplanting a part of the crop, doing it carefully on a warm wet day. A portion of the crop, or a special patch, is reserved for seed, and is not to be cut for fodder. When the seed-bearing plants are about 5 ft. high, the clumps are thinned, cutting out all but three or four of the best stalks, and using the thinnings as forage; as other shoots appear, they are also cut out. When the grain is in the milk, the lower leaves, to 5 or 6 ft. from the ground, are removed, to admit the sun to the roots to assist in maturing the seed. When the seeds are ripe, the heads are cut, and put under shelter to cure thoroughly; if not well cured, they are apt to be attacked by insects. For forage, the cutting begins when the plants are 3 to 5 feet high, and continues every 25 or 30 days, until frost; the plant throws up additional shoots after each cutting, if properly cared for; the stalks are cut within two inches of the ground, and the crop must then be kept clear of weeds until the new growth gains the ascendency over them. In Florida Mr. R. planted about March 18th, and commenced cutting in about 60 days; up to Sept. 1st he had made five full cuttings, the united lengths of which he estimates at full 20 feet; he mentions no cutting beyond Sept. 1st, as he was then obliged to come North on account of ill health, and his patch was turned into a pasture. Mr. Reid is confident that, for the Southern States, on rich land, the Durra will exceed in value all other forage plants. A consideration of the value of Durra as a grain crop must be postponed until another time. If used for this, or any other purpose, it should be under its proper name. Not long ago the Durra was offered as "Ivory Wheat." To judge from the description and engraving, a variety of it is this year offered under the absurd name of "Pampas Rice."

DURRA, OR COMMON SORGHUM.—(*Sorghum vulgare.*)

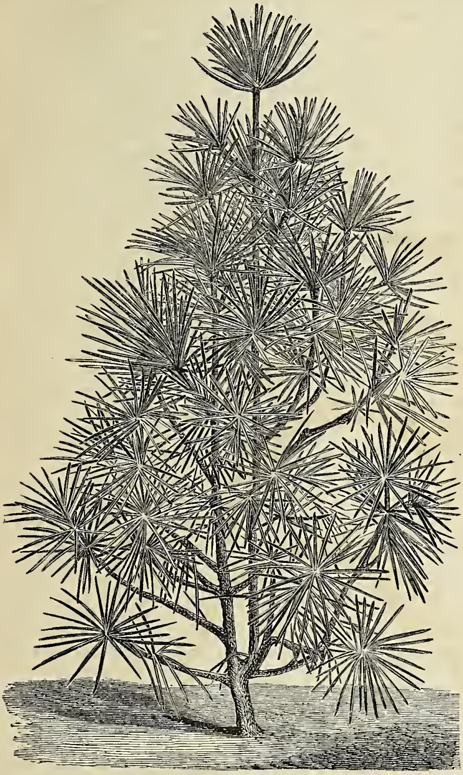
The Umbrella Pine of Japan

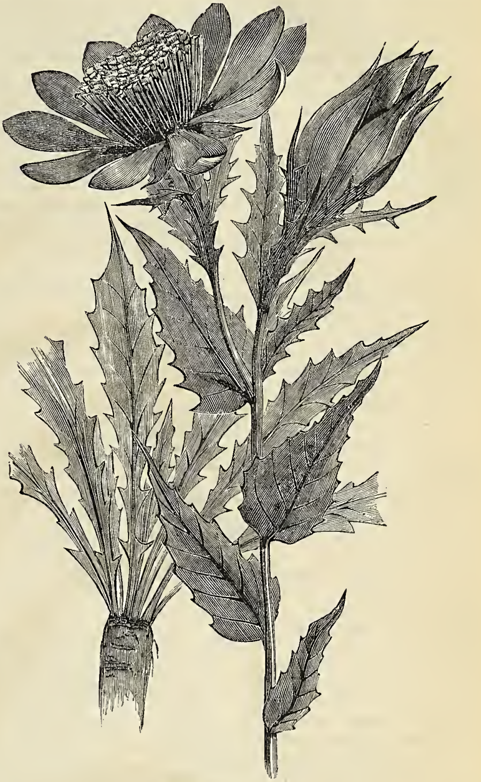
(*Sciadopitys verticillata.*)

Though the Umbrella Pine was described nearly a century ago by Thunberg, who regarded it as a species of Yew, it was not known in European gardens until 1860, when it was introduced by Fortune. It was first correctly described and figured by Siebold and Zuccarini in their Flora of Japan, (1834), who recognized it as a new genus, to which they gave the name *Sciadopitys*, from the Greek words for umbrella and pine-tree; on account of the peculiar arrangement of the leaves and branches, they called the species *verticillata.* Siebold, who saw the plant only in cultivation in the gardens and in the grounds around the temples, described it as growing only 12 to 15 ft. in hight, but according to later travelers it reaches from 80 to 150 feet, and is one of the grandest of all forest trees. The branches are alternate or whorled; the leaves are flat, about one-sixth of an inch wide, and about four inches long, are arranged in whorls of 30 or 40, at the ends of the branches, each whorl spreading and assuming an umbrella-like form. The leaves last three or four years, and the young branches show a succession of several such whorls separated by spaces equal to the annual growth of the stem. The male and female flowers are probably upon different branches of the same tree, the latter ripening into a cone the year after flowering; the cones are about three inches long and half as thick, cylindrical, and composed of very thick, broad scales, between which are equally broad bracts, each scale bearing six to nine seeds. None of the conifers from Japan have been watched by cultivators with more interest than this. At first it was quite too rare and costly a plant to allow its hardiness to be generally tested; we have known for several years of a specimen near Philadelphia, which has stood the winters there, but as that locality seems to be the northern limit of many things, this single case could not be taken as an indication of its behavior farther north. We were especially pleased to receive from Mr. Charles H. Hovey, of Hovey & Co., Cambridgeport, Mass., a photograph of the tree from which our engraving is made, and the following notes which seem to put the question of its hardiness beyond a doubt. Mr. Hovey writes:

"This new conifer cannot be too highly recommended, should it continue to withstand the climate as successfully as it has done in the vicinity of Boston for the last four very severe winters. We have a specimen which has stood out during that time, without the slightest protection, and it has not received the least injury to any part of its branches. Mr. Wm. Gray, Jr., has also a specimen which has been out about the same time, which has also been without protection and without injury. Our plant is now about five feet high, and from its peculiar habit is noticeable among all the other conifers. It may well be a favorite with us, as it is with the Japanese, on account of its distinct and striking appearance, and now that its hardiness seems to be established, it will no doubt be generally grown."

From what we have seen of the tree we can heartily second Mr. Hovey's commendation. With most conifers, their power of endurance increases with age, and many that are hardy when well established, require protection when first planted; that this endures the winter when quite small, gives excellent promise for its future. Those who have a place for a single choice, striking evergreen, or for only a few varieties, should consider the Sciadopitys in making a selection. According to Siebold, the Japanese have several varieties, and the French catalogues mention one with the foliage marked with yellow blotches, but we can not conceive this to be any improvement upon the rich green of the ordinary form, and it is too dignified a tree to indulge in any such vagaries.


UMBRELLA PINE OF JAPAN.


MENTZELIA ORNATA.

The Mentzelias as Garden Plants.

The genus *Mentzelia*, named in honor of Mentzel, an early German botanist, is peculiarly a North American one; it contains about 30 species, all but two of which belong beyond the Mississippi. Among these, a number are of merely botanical interest, while several are remarkably showy plants. Nuttall, regarding some of them as sufficiently distinct, placed them in a separate genus, which he called *Bartonia*, in honor of Dr. B. S. Barton, of Philadelphia, one of the early American botanists. When these plants were carefully studied by Torrey and Gray, they found no good distinctions to separate Nuttall's *Bartonia* from the earlier *Mentzelia* of Linnæus, and besides Barton's name had already been previously applied to another, and quite different plant, and it had to be dropped. This is a matter of regret, as we should much prefer to have the name of Barton borne by some of the finest of our native plants, than as now, by some of the most humble, but such matters are not governed by preferences, but by rule. The name *Bartonia* is still continued in the seed catalogues, for plants which are properly Mentzelias. As many persons, even some who have passed their lives in the cultivation of plants, cannot understand why a name once given to a plant should not be retained by it ever after, we give the above bit of nomenclature to show that these changes are not matters of fancy, and are never made—at least never by botanists of eminence—without sufficient reason. In this case there are two reasons, either of which would suffice: firstly, the plants which Nuttall called *Bartonia* are not distinct from *Mentzelia*, and secondly, Muhlenberg had given Barton's name to a little Gentian-plant, about a dozen years before Nuttall applied it to the plants in question.

The Mentzelias belong to the Loasa Family, which need not be described, except to say, that they are herbs, often with stinging bristles, and related to both the Evening Primrose Family and to the Cactus Family, in some respects. The genus *Mentzelia* includes annuals, biennials, and possibly some are perennials, with alternate, mostly lobed leaves, which, as well as the stem, are clothed with rough bristles. These bristles, by the way, are in some species most interesting objects for the microscope, as they present a great variety of elegant and curiously formed hooks and barbs. The yellow or white flowers have from five to ten petals, and many stamens, all upon an ovary which ripens into a few- or many-seeded pod. *Mentzelia Lindleyi*, which is "Bartonia aurea" of the catalogues, is an annual from California, one to two feet high, with bright yellow five-petalled flowers, opening in sunshine, and is a pleasing plant. The finest species of all is *Mentzelia ornata*, a biennial, if not perennial. It grows four or five feet high, branches freely, and bears large creamy-white flowers which open at sunset, or earlier on a cloudy day. The engraving, being much reduced in size, while it gives the shape, fails to convey an idea of the exceedingly showy character of the flower. There are ten petals, at least two inches in length, rather firm and papery in texture, and within these there is a crowd of 200 or 300 stamens, remarkably long, erect, and stiff, giving the flowers somewhat an artificial look, and from the number of stamens they resemble some cactus flowers. They are very strongly, and pleasantly fragrant. This species is called *ornata*, meaning furnished, on account of the leafy bracts beneath the flower. A related and similar species, with flowers about half the size, is without the bracts below the flower, and is called *M. nuda*, or naked *Mentzelia*, and though greatly inferior to the other seems to be better known in cultivation. Both species are found in Nebraska and southward. Though biennials, they will, if the seeds are sown early under glass, bloom the same year, but their flowering will be much later than if sown in August or September, to bloom the next year. It would be safer to winter the plants in pots in a frame, but if left in the open ground they should have a dry spot, as there is danger that their fleshy roots may decay if too wet. The plant branches freely, and should not stand closer than three feet. The English horticultural journals notice the failure of *M. ornata* to flower with them, their climate being too cool for it—a marked contrast with our own success last summer, when a row, 50 ft. long, was towards sunset sheeted with bloom, and presented a sight worth going far to see. A correspondent of the "Garden" quotes a Dr. Bell as authority for the statement that the plant is "called by the ranchmen the Prairie Lily," a name that we have not before heard for it, and which is such a thorough misnomer that it should be suppressed. The same author states that the odor is oppressive and causes violent headache, a peculiarity we have not noticed, and probably like many other odors it unpleasantly affects only certain individuals.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE X.—THE BUSY BEE.

The season of flowers had passed and winter was upon us before we could reach the most curious and special of all the arrangements by which insects are made to fertilize blossoms, namely, that in which they carry all the pollen of a flower in a mass from one plant to another. This is just what is done in two large families of plants, viz.: the orchis and the milk-weed families. They are widely different from each other in other respects, but they agree in this. Perhaps, when the season comes round, we may take some of these cases in hand. But for the present we have had cases enough, and in sufficient variety, to raise several serious questions. First of all, what is the good of cross-fertilization? To impart new vigor, is the answer that we have all along given. But where is the proof that crossing does invigorate? Moreover the cases in which flowers must needs be cross-fertilized, shade off into those in which they merely may cross now and then, and are matched by another kind of case, in which they must self-fertilize. If, on the one hand, many blossoms are as plainly adapted for cross-fertilization "as the teeth and talons of a carnivorous animal are adapted for catching prey," we must admit that there are others in which self-fertilization is just as clearly aimed at. How are these cross purposes in Nature to be reconciled? Then, how and why does crossing give new vigor? In most plants—at least in large herbs and in trees and shrubs, with their hundreds and thousands of flowers—the most likely crossing is that of blossoms on the same tree, or the same branch or cluster. Is such near crossing as serviceable as that between the flowers of separate plants? And if not, why not? Finally, considering the multitude of flowers which most plants bear, and the short time each is in blossom, is it at all likely that most or many of those which are said to need help will actually be visited by insects?

Now most of these questions have been taken up and answered by Mr. Darwin in a book just published, entitled "The Effects of Cross and Self-Fertilization in the Vegetable Kingdom." Our readers will be interested to know what Mr. Darwin has to say upon these questions.

We take the last question first; and cull the following from the XIth chapter of this new book, which treats of "the habits of insects in relation to the fertilization of flowers."

In this kind of work, and in other respects, bees are the most knowing and the most useful of insects. "All kinds of bees, and certain other insects, usually visit the flowers of the same species as long as they can, before going to another species." It appears that Aristotle observed this with respect to the hive-bee more than 2,000 years ago! It does not hold true without exception, but is generally true. This is very good for the flowers, as it greatly favors the cross-fertilization of distinct individuals of the same species, and avoids waste of pollen. But why do the bees do it? To save time. They have just learned how to stand in the best position on the flower, and how far and in what direction to insert their proboscis; and so they will work much quicker than if they were to take different flowers promiscuously, each kind requiring different management. This explanation was hit upon independently by Mr. Darwin and H. Müller. "Humble and hive-bees are good botanists; for they know that varieties may differ widely in the color of their flowers, and yet belong to the same species." They have been repeatedly seen to go straight from a red Fraxinella plant to a white one, from a dark purple Pansy to a bright yellow one, etc. This is the more curious, because Lubbock has shown that bees distinguish and are very much guided by colors; and when Mr. Darwin cut away the blue petals of *Lobelia Erinus*, and Mr. Anderson, the corolla of a *Calceolaria*, the bees ceased to visit them. That color is not the only guide is also shown by bees flying straight from one clump of a yellow Evening Primrose to every other clump of the same plant in the garden, not turning aside to Eschscholtzia—flowers which they passed close by. But how did the bees discover that red and white Fraxinellas belong to the same species? They probably have a keen sense of odors, and Fraxinellas are strong-scented; but that will not explain the remarkable fact, vouched for by H. Müller, that bees collecting pollen from primroses, "invariably passed by the flowers of the long-styled form, in which the anthers are seated low down in the tubular corolla. Yet the difference in aspect between the long-styled and the short-styled forms is extremely slight."

The industry of bees is proverbial. But some of the facts, which Mr. Darwin has himself observed, give us a still higher idea of it. They appreciate the value of time. When flowers, such as Columbines, have several nectaries, if they find one exhausted by other bees, "they do not try the others, but, as I have often observed, pass on to another flower." "Humble-bees fly at the rate of ten miles an hour." Does any one know the rate at which hive-bees fly? As to the number of flowers visited in a given time, Mr. Darwin observed that in exactly one minute, a humble-bee visited 24 flowers of *Linaria Cymbalaria;* another, 22 flowers of Snowberry; a third, 17 flowers of Larkspur on two plants. Watching a single flower of Evening Primrose, he saw it visited eight times in 15 minutes by several humble-bees, and, in following the last of these bees, he found that in a few additional minutes it visited every plant of the species in a large flower-garden. In one minute, six bell-flowers were entered by a pollen-collecting hive-bee, although gathering pollen is much slower work than sucking nectar. Within ten minutes seven flower-stalks of a Fraxinella were visited by 13 humble-bees, each of which entered many flowers. A few days afterwards, the same plant was watched for ten minutes, and 11 humble-bees visited the flowers. Mr. Darwin computed that each flower of this Fraxinella must have been visited at least thirty times a day, and the same flower keeps open during several days. From these examples we learn what efficient fertilizers bees must be.

A few words about the habit which some bees have of taking their wages while shirking their work. In all honey-bearing blossoms there is a proper mode of access, which most insects avail themselves of according to their ability and opportunity. But bees are very apt to enter in some other way, especially by perforating the tube or base of the corolla. Almost every one has observed this in bean blossoms, and here the structure of the flower is such that the larceny may save time; and the same may be said of red clover, in which occasionally most of the blossoms examined are found to have been perforated and rifled. But it is also done in simpler flowers, where it would seem that the nectar might be honestly come by with quite as little trouble.

As far as Mr. Darwin knows, it is always humble-bees which bite the holes; but hive-bees are quick to take advantage of it,—and not slow to learn the trick, it seems, for H. Müller has seen them bite holes in the corolla of a heath. Mr. Darwin records the following observation, made twenty years ago, and published at the time in the "Gardeners' Chronicle." "I was led to observe, during some weeks, several rows of the scarlet Kidney-bean, whilst attending to the fertilization of this plant, and daily saw humble and hive-bees sucking at the mouths of the flowers. But one day I found several humble-bees employed in cutting holes in flower after flower; and on the next day every single hive-bee, without exception, instead of alighting on the left wing-petal, and sucking the flower in the proper manner, flew straight and without the least hesitation, to the calyx, and sucked through the holes which had been made only the day before by the humble-bees; and they continued this habit for many following days.—Now how did the hive-bees find out so quickly that holes had been made? Instinct seems to be out of the question, as the plant is an exotic. The holes cannot be seen by bees whilst standing on the wing-petals, where they had always previously alighted. From the ease with which bees were deceived when the petals of *Lobelia Erinus* were cut off, it was clear that in this case they were not guided to the nectar by its smell, and it may be doubted whether they were attracted to the holes in the flowers of the Phaseolus by the odor omitted from them. Did they perceive them by the sense of touch in their proboscides, whilst sucking the flowers in the proper manner, and then reason that it would save them time to alight on the outside of the flowers and use the holes? This seems almost too abstruse an act of reason for bees; and it is more probable that they saw the humble-bees at work, and understanding what they were about, imitated them, and took advantage of the shorter path to the nectar."

Why do bees gnaw holes when they might get the nectar in the regular way?—No doubt to save the time of climbing in or out of the larger flowers, or of crowding their heads or tongues into narrow passages in small ones. From observation of insects working either way in certain flowers, Mr. Darwin judged that they could visit nearly twice as many in the same when they sucked through the perforations. But then much time must be lost in making the holes, especially when they are cut through both calyx and corolla. So the boring would hardly pay except where flowers grow in great numbers of the same sort together. And Darwiu says he was long ago struck with the fact that it is only under such circumstances that humble-bees perforate flowers. If this is so, no species is likely to run out for want of crossing through this injurious habit of bees. For as long as the flowers are very plenty, a sufficient number will get cross-fertilized; and whenever they become scarcer, the bees, no longer stimulated by the abundance to work in the surreptitious wholesale way, will enter the flower in the legitimate manner.

Does any one know of an instance of the perforation of any fugacious flower, any which lasts only one day? If no such case occurs, it will confirm the suggestion that the perforations are made to save time, and show all the more what keen and sensible observers bees are.

Cheap Greenhouses—How to Heat them.

BY PETER HENDERSON.

In the *American Agriculturist* for November, 1874, I described and gave a diagram of a method of heating a greenhouse, 20 feet wide by 100 feet long, by the ordinary smoke-flue and with only one fire. Heretofore it had been generally believed that it was impossible to heat a structure of that size with but one furnace, and few ever risked a house more than one-third of the size with a single fire. The principle there described, although not a new one (as I afterwards ascertained, as it had been recorded in the transactions of the London Horticultural Society some 50 years before), had certainly never been generally practised, and its publication in the *American Agriculturist* has created a great deal of interest, and has involved me in an extensive correspondence. In that article I unfortunately showed only its application to that particular structure, which was too large and too expensive for the wants of most beginners in floriculture, I have received numerous letters inquiring about the application of this principle to smaller and differently shaped houses. Finding it well nigh impossible to satisfactorily reply to these queries by letter, I will show in this article how other houses of different designs and of smaller dimensions may be heated on the same principle. Figure 1 shows three of the usual ridge and furrow houses, which are 60 feet long and 11 feet wide, each with a furnace room, or shed, at one end, which is 12 × 33 feet.

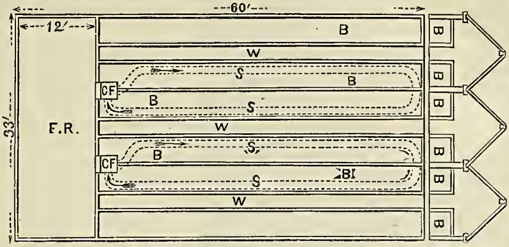


Fig. 1.—PLAN OF THREE HOUSES COMBINED.—Length, 60 ft.; width 33 ft. *F, R, Furnace Room, 12×33 ft.; B, B, Benches, 4½ ft. wide; W, W, Walks, 2 ft. wide; S, S, Smoke-flue for heating; F, C, Furnace, with Chimney built on top of it.*

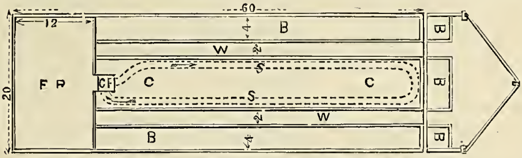


Fig. 2.—PLAN OF A SINGLE HOUSE—60 × 20 ft.

F, R, Furnace Room, 12×20 ft.; B, B, Side Benches, 4 ft. wide; C, C, Center Bench, 5 ft. wide; W, W, Walks, 2 ft. wide; S, S, Smoke-flue; C, F, Furnace with Chimney above.

Of course the length may be increased or diminished as desired, but this width is found to be the most convenient. It will be seen that the three greenhouses are heated by *two* furnaces, the flue being so disposed under the center benches of the houses as not to cross any of the pathways. This gives, of course, two runs of the flue to the middle house, and only one run each to the outside houses. This would in coldest weather give a temperature of not less than 40° to the outside houses, and 60° or 65° to the middle house, which has the two runs of flues. This difference in temperature is indispensable in a general collection of plants, and the neglect of it is more than anything else the cause of failure where growers have but one greenhouse. It will be necessary to have the flues built as close to the walks as possible, so that the heat be evenly distributed in the two outside houses. Figure 2 shows a greenhouse 20 feet wide by 60 feet long, with furnace room, or shed, 12 × 20 feet. Here again the flues are so disposed as to avoid crossing the walks, being placed under the center bench, but as near as possible to the walk on each side, so that the heat may be evenly diffused throughout. If a difference in temperature is required in a house of this kind, it may be obtained by running a glass partition *across* the house, say at 25 feet from the furnace end, which will, of course, make that end the hottest. It will be seen that the principle set forth in my article of November, 1874, is carried out in both these plans, and it would be unsafe to attempt to heat greenhouses of these dimensions without conforming to it. Its peculiarity consists in running the flue, in each case, back to the furnace from which it starts and into the chimney, which is built on the top of the furnace. As soon as a fire is lighted in the furnace, the brick-work forming the arch gets heated, and at once starts an upward draft, which puts the smoke-flue into immediate action and maintains it; hence there is never any trouble about the draft as in ordinary flues having the chimney at the most distant point from the furnace. It will be seen that by this plan we not only get rid of the violent heat given out by the furnace, but at the same time it ensures a complete draft, so that the heated air from the furnace is so rapidly carried through the entire length of the flue, so that it is nearly as hot when it enters the chimney as when it left the furnace. This perfect draft also does away with all danger of the escape of gas from the flues into the greenhouse, which often happens when the draft is not active. Although no system of heating by smoke-flues is so satisfactory as by hot water, yet there are hundreds who have neither the means, nor inclination to go to the greater expense of hot-water heating, and to such this revived method is one that will, to a great extent, simplify and cheapen the erection of greenhouses. Many old established florists, who have had the old plan of flues in use, have changed them to the one here described, and with great satisfaction. The wonder is that such an important fact has been so long overlooked, for when at the time it was discovered, heating greenhouses by flues was almost the only method in use.

As some may desire to know the cost of structures like those above described, I would say that, at present prices in the vicinity of New York, the plan of figure 1 would cost, complete, about $8 per running foot, or about $600 for the whole building, 72 × 33. The house shown in figure 2 would cost about $7 per running foot, or about $500 for the 72 × 20. This price is only for plain substantial work, such as is put up by commercial florists. The side and end walls being made of wood in the usual way, with cedar or chestnut posts, (locust is more durable than either,) and double boarded with a layer of tarred paper between.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

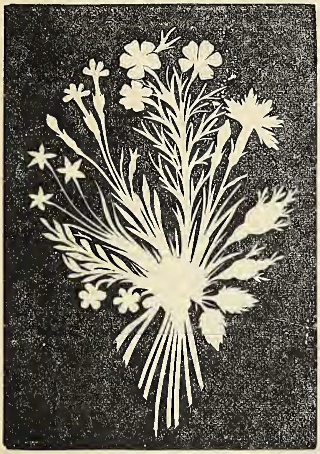
BY FAITH ROCHESTER.

Early Education.

I have just gathered a little bundle of reading matter to lend to a friend in another town; and, as she may be supposed to be especially interested in all that bears upon the subject of babies, I have placed side by side two books, neither of them new, which may serve well to complement each other—"Ginx's Baby" and "The Child." The former, a good satire, and treating of politico-social economy, cannot fail to deepen in the mind of a thoughtful reader a sense of the danger of neglecting the early education of future citizens. Though one cannot help smiling at the fine touches of the satirist, one is moved at the same time with horror and compassion over the condition of the lower strata of humanity. Perhaps London is worse than any American city, but we all need to be stirred to the depths of our hearts over the ignorance and misery and consequent wickedness of millions of our fellow creatures. If we turn from the strange fortunes of that typical character, "Ginx's Baby," to Madam Kriege's book, "The Child," we can see, at least by faith, what may be the destiny of the human race on earth, in future ages: for surely we shall at last learn—if not in your day and mine, in some generation not far distant—the necessity of giving human beings a careful education in their earliest and most impressible years. A "careful education" does not mean a deal of molding and binding, and hacking and hewing of the young immortal, but it means at least a healthful and happy atmosphere for soul and body both, and simple nourishment suited to the needs of both soul and body, and freedom for natural exercise of all the developing faculties in a manner promotive of the private and public welfare.

For the best success in this business of educating the young, associated effort is certainly necessary. "All are needed by each one." Young parents with only one child can hardly appreciate this fact. They mean to do their duty by their child, and they love it so dearly that they imagine themselves ready and able to supply all its needs. Family influences are strong, but they are by no means all-powerful. Few fathers and mothers exert an entirely wholesome influence upon their children, and there are besides neighbors and schoolmates of every variety of character. Our children have to be educated for life in the world as they find it, and so contact with society is as necessary as it is natural. For children, is needed a society of their equals, or the companions of school and the playground, and these exert an influence upon our children's habits, opinions, and aspirations, too strong to be disregarded in our account of educational influences. So, for very love of those descendants whom we call "our own," if for no broader or more humane reason, we must labor for the general education or for the establishment of free schools adapted to every age. At present you and I may not be able to find public primary schools where we dare to place our tender little ones; the public schools are sometimes too crowded, too low in their social tone, and badly managed in sanitary regards, as well as deficient in wise intellectual culture and wholesome moral stimulus.

But no parent can afford to withhold sympathy from the public schools. When the kindergarten is at last a part of the public school system, all over the country, we shall have taken a long step toward "peace on earth and good will among men." It is a great thing to accomplish, but it will cost far less than our present reformatories, and prisons, and various police arrangements for preventing and punishing crime. All the effort used to establish good schools for children of all ages and conditions tends to make less and less expenditure necessary for restraining and reforming bad men and women.


MISS BAILEY'S PAPER CUTTING.

Reforming old sinners is a slow and difficult task—we must lay the ax at the root of the tree of evil, and work earnestly to train up the young—all of them, rich and poor, Jew and Gentile—in the way they should go. If you and I cannot do anything in particular to push forward the kindergarten movement, we can serve the cause by waiting patiently for it, ready to take hold of the good work whenever it comes our turn, doing our own work meanwhile with the little ones around us as best we can, in the absence of the various helps and facilities which we know to be most desirable.

Home Tailoring.

If every wife would make her husband's coats, vests, and trousers, what a nice sum she might earn him each year! But then, why ought she any more than he should make her shoes and bonnets?

No, my brethren, not one of you must expect that, as a matter of course, your wife will always make even your shirts, and you surely must not expect that a woman, who has never served an apprenticeship as tailoress, will make you stylish outer garments. In a spasm of economy I decided that, considering our circumstances, including the fact of my possession of a sewing machine, it was my duty to learn to make the "everdy" clothing of my husband. He brought home an unmade coat and trousers cut by a good tailor. By studying his best tailor-made suit I was able to get the trousers together properly, but I gave up the coat in despair, first spending some precious hours in the study of a coat which I thought to use as a model. I at length gave it up, and the coat went to a tailor to be made up. I had thought to line it, and make it for a winter coat, but since I have ripped up an old coat, and discovered the wadding, and stiffening, and stuffing used in its manufacture, I am glad I did not persevere and spoil the garment. A tailor would have charged nine or ten dollars to have made the coat as I intended. It was finally made for spring without a lining, and, simple as the modest sack appeared in its construction, four dollars were paid for stitching those seams, hemming the bottom, and making three or four button-holes. I doubt whether the cloth cost more. I think I *could* make such an unlined sack-coat as that now, having practiced on boys' clothing with Butterick's patterns, but if a tailor thinks the job worth four dollars when the garment is all cut, I need not feel ashamed if I cannot rival him when I have served no apprenticeship. There is a knack about the pockets and the collars which the uninitiated can hardly expect to attain. In making our own frocks we often leave the pocket till the last thing, but pockets are of the first importance in a man's equipment, and you must get the pockets all right the very first thing. But one thing I can do, which I consider a valuable accomplishment in present circumstances. I can take a well-worn pair of grown-up trousers and make them over for a boy of ten, with very little labor, and so that they will do considerable service for home or school wear. Rip them apart and rip open the inside seam of each leg. Then lay your patterns upon each leg close to the unripped seam. At the top, you can cut them so as to retain the pockets and band, while cutting away the worn fronts. If the back has worn thin, the patches set in come so low down on the new and smaller pair, as to attract little notice. The knees are probably the worst part, and it is the easiest way to amputate the leg at the top of the worn portion, and, cutting it off again just below the bad place, sew the top and bottom together, matching the seam, of course. Possibly the same straps and buckle may be used behind without altering their former position.

Children's Teeth.

I have been looking at my little girl's teeth, and neither she nor I can tell exactly which ones belonged to the first and which to the second set. This leads me to regret that I have not kept memoranda of all such matters pertaining to my children's development. I have seen a book advertised, especially designed for this purpose, and I think young mothers would do well to provide themselves with one on the first appearance of "a babe in the house." It should be kept private, and every important physical change noted, with its date. Facts of this kind are sometimes of great service to the family physician, when called upon to prescribe for a member of the family. Parents often try vainly to remember just when some accident happened, or some childish sickness, which proves to have far-reaching and unforeseen results. It is interesting to observe the dental changes of a child. The coming of each little tooth in the first set is a great event in the family, but to the child itself, the process of second teething is deeply interesting. Here is a little girl by my side who feels more pride over a vacant place among the front teeth of her lower jaw than over any other feature of her face. She is sure now that she is growing up like other children, and she watches every day for the coming of her first "second tooth." Her sister, who never had any difficulty at all about getting her first set of teeth, used to complain a year ago of great uneasiness in her jaws when the new double teeth were pressing through. You know, probably, that the first set of teeth has only eight double teeth, (or molars), and the child gets one more of these grinding teeth on each side of each jaw, or four new molars, when it gets its second teeth. The "wisdom teeth" come later in life, and sometimes with considerable pain. Some dentists and physicians think it a matter of great importance that children should have a plenty of bone-forming food all through the growing years, and investigation has convinced them that children fed on a plain diet, consisting largely of milk, oatmeal or graham, with lean beef, (if any meat), and vegetables and fruit, and little or no cake and sweet-meats, have better teeth—less trouble with the teeth every way—than children who eat considerable molasses, sugar, cake, and candy.

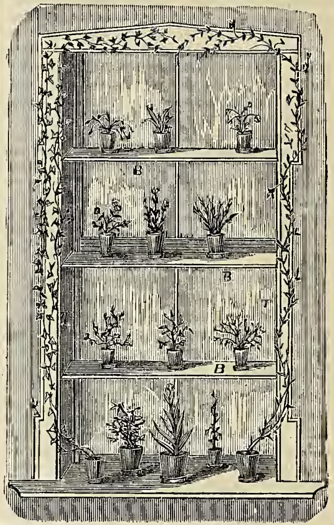


Fig. 1. WINDOW-SHELVES FOR PLANTS. *See next page.*

I saw a good dentist removing tartar from a lady's teeth after having filled several cavities. He used simple pumice-stone, which he said was the basis of many tooth powders. This he applied with a small pine stick, so scouring the teeth. Afterwards I treated the teeth of two little girls in the same manner. Their teeth had been neglected until they had a dark yellowish border next the gums. Simple washing with a tooth-brush would not remove this, but after one scouring with the pumice-stone, they were easily kept clean by the daily use of a tooth-brush. Well kept teeth do not need "scouring," and powders of all kinds should be cautiously used. Children should be taught to take care of their teeth, to keep them clean, and to avoid all abuse of these useful members.

Art with Scissors.

As we were leaving the Women's Pavilion at the Centennial Exhibition, one evening, a lady, prominent in horticultural matters in the West, met us, and insisted that we should go back to see some beautiful flower work, cut out by a lady from paper. Not having much admiration for paper flowers, we turned back with some reluctance, and were introduced to a lady who, with scissors, was "evolving" from a strip of white paper, the most graceful flower and leaf forms. The lady presented us with a specimen of her work, mounted upon a square of black paper, upon the back of which was her card, "Harriet F. Bailey, of Walworth, Wis., 3601 Ludlow St., W. Phila. Pa." Miss Bailey's work shows an evident desire to follow nature, and being made from memory only, without drawing or any pattern to copy, it is placed far above anything like paper flowers, and similar productions. There is great ease of outline, and a grace in grouping and execution, that makes them very pleasing. To show what her cuttings are like, we give an engraving of a small cluster of the actual size. It will be seen that it is quite unlike those paper cuttings made by doubling the paper, once or several times; in those there is a reproduction of forms, and one side is the counterpart of the other. As the sculptor, who said that the statue was already in the block, and his business was merely to chisel away the superfluous marble, so Miss B. sees flower and leaf forms on the blank sheet, and she, only with fine scissors, liberates them from their imprisonment in the paper. We inquired of the lady how she came to take up this art, and learned that when a child, she and her sister occupied themselves in cutting, without any teaching; if they wished to describe anything to one another, or to their mother, they would take paper and scissors, and cut out the form of fruit, flower, or whatever object they wished to indicate, the scissors serving in their hands the place of pen or pencil. We found the artist with more orders on hand than she could fill, from those who wished to take away some graceful little remembrancer of the Women's Department of the Exhibition. We learn that Miss Bailey will have a desk at the permanent exhibition, which is soon to open in the Main Building. Children are very fond of cutting paper, and Froebel knowing this introduced paper-cutting among his Kindergarten occupations; though his is a mechanical kind of cutting, with folded paper. If children wish to cut paper, they should be encouraged to copy forms, and with an object in view, thus educating the hand and the eye, but it is only where there is a strong love for the objects represented, and an unusual natural talent to reproduce with the hand what is seen by the eye, that any can hope to attain to the skill shown in the work here noticed.

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Plant-shelves in Windows.

BY L. D. SNOOK, YATES CO., N. Y.

Those who keep window-plants, will find that the following plan for attaching shelves to the windows will be useful in many cases, though of course its applicability will depend much upon the manner in which the house is built. The movable strip, or "stop," which holds the sash in place, is taken out, and in its place is put one an inch thick, and four or five inches wide, or as wide as the window will allow, as shown in fig. 1 by *B*, *B*. There are of course two of these, and in each is a series of grooves or "gains," as the carpenters say, intended to admit the ends of the shelves. To make this plain, an enlarged portion is shown in figure 2. By rounding the corners of the shelves, those for the larger pots may be six or seven inches wide, while the side strip which supports them is only four inches wide. Figure 1 shows a window thus furnished. When the shelves are no longer required, the side-pieces may be taken out and the "stops" returned, and no part of the window-frame will have been marred or injured in any way. Where it is not practicable to remove the "stops" and substitute side-pieces, then the shelves may be supported on brackets, of the form shown in figure 3. Any blacksmith can make these of a piece of nail-rod; they should be furnished with holes for screws, by which they can be attached to the window-frames, and there should also be a hole at *P*, through which to pass a screw from below into the bottom of the shelf, to hold it firm.—[We may add that Mr. S.'s suggestion of brackets will answer to support a window-box, which is by many window gardeners preferred to pots. Any rough box, of a length to suit the window, and about six inches high and wide, will answer. Have the tinman make a zinc lining to fit, and high enough to turn over the edge of the box, so that no earth may get between the box and the lining. The outside of the box may be covered to suit the fancy; strips of bark, or split twigs, will give a pleasing rustic effect, or it may be covered with a bit of floor oil-cloth with a molding on the edges. We once covered a box with oil-cloth of a mechanical pattern, and it had every appearance of an expensive tile-covered box. Recollect that a box of this kind is very heavy when filled, and the brackets and their fastenings must be correspondingly strong.]

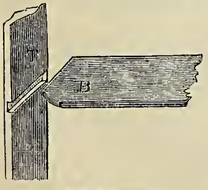

Fig. 2.—SHELF.

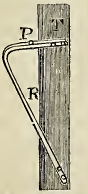

Fig. 3.—BRACKET.

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COVER TO A PORK BARREL.—In families where pork is largely used, to cook or in cooking, the barrel, usually kept in the cellar, is frequently visited, the required slices of pork cut off, and the piece returned to the brine. It is a very simple matter, but very often there is no place at hand, clean enough, or suitable, whereon to place the piece of pork, while cutting. To supply this, our correspondent, Mr. L. D. Snook, suggests a cover to the barrel which will make the work cleanly and easy. Figure 1 shows the barrel when closed by its cover. The board, *A*, covers a part of the top of the barrel, being fastened by screws, and extends over to form a shelf, supported by the brace *E*. The remainder of the cover, *B*, is hinged to this stationary part. When the cover is opened, as in fig. 2, it rests upon the shelf, and affords a firm, clean, and convenient surface on which to do the cutting, and there is no trouble in looking about for a suitable place. These small things cost only a little time, and not much of that, but help make house work go on smoothly.

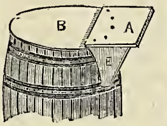

Fig. 1.—COVER CLOSED.

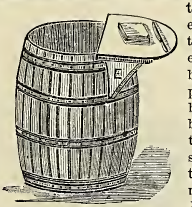

Fig. 2.—COVER OPEN.

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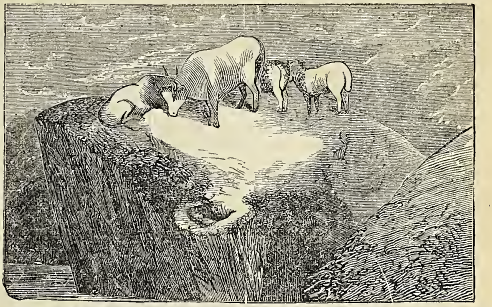
PAINTING FLOORS.—"R. S. M.," Dodge Co., Nev., writes: "There is but one paint suitable for the purpose—*French Ochre*. First, if the boards have shrunk, clean out the joints well, and with a small brush give them a heavy coat of boiled linseed oil, then putty up solid. Now paint the whole floor with a mixture of much oil and little ochre, for the first coat, then, after it is well dried, give two more coats of much ochre and little oil, finally finish with a coat of first rate copal varnish. This is an extremely durable paint for floors, in-doors or out, such as verandas, porticoes, and the like. A floor stain is best mixed with *oil*, and finally varnished.

BOYS & GIRLS' COLUMNS.



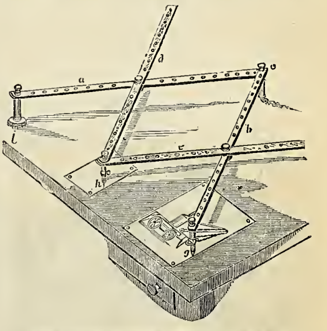
No. 458.—**Puzzle Picture.**—The artist calls this picture a view of the "Enchanted Bluff." There must be some charm to attract the animals there. It may be that they only got up there by "enchantment." It may be that he calls it enchanted for some other reason, and it may be that you can find out what it is.

A Drawing Machine.

Master A. J. H., writes to The Doctor that he saw at the Centennial Exhibition a machine used to copy drawings, called a "Smithograph," he sends a circular describing it, and wishes to know if he has a right to make one. The circular speaks of the "great, new, and beautiful art of Smithography," and much besides. Now I do not know anything about this "Smithograph," but I can tell my young friend something

ABOUT THE PANTOGRAPH,

which, whatever else it may be, is not "new." I saw it when I was a youngster, and of course it can not be so *very* recent. In fact, it is nearly 300 years since the thing was invented, and the novelty has worn off by this time. I find an engraving of it in that new and excellent book, Knight's "Mechanical Dictionary," which I give here.



PANTOGRAPH OR DRAWING MACHINE.

It is made of four rules, which my be of brass or of some hard wood. Two of these, *a* and *b*, are jointed at *c*; the other two, *d* and *e*, are jointed together over *h*. At *i* is a fixed point, screwed to the table, to which the rule, *a*, is so fastened that it can move easily. At *g* is a point for a tracer; at *h* is a pencil. When the point, *g*, is moved, the point or pencil at *h* follows its movements exactly. The joints, *c* and *h*, should work freely, but be true; these are not to be altered. The upper pair of rules, *d*, *e*, are fastened to the other pair, *a*, *b*, at any desired point; according to their position, the drawing traced by the point *g*, will be repeated by *h*, either larger or smaller. The drawing to be copied, is fastened by pins at *g*, and a piece of paper placed under the pencil at *h*; by carefully following the lines of the drawing with *g*, it will be repeated at *h*, the same size, or smaller, according to the point where the upper pair of rules are attached to the lower. To have the Pantograph work nicely, it must be well made, all the joints move easily, yet closely; it requires a little care to get the "hang" of it. At *c* there should be a leg or prop, to hold up the corner, and this should be smooth on the end to move on the board easily. The Pantograph—the name from the Greek for *all* and *to write*—will allow one to copy maps, plans, and such things very accurately, and to reduce them. I am afraid that not many boys are sufficiently skilled in the use of tools to make one themselves—but they can *try*.

How the Boy's Eyes "Sparkled."

A Father writes Dec. 30. "....It would have done the Publishers good to have seen our Jamie come rushing in from the P. O., all out of breath, to-day, and how his eyes did sparkle as he opened part after part of his 'Multum in Parvo Knife,' which came to him as a Premium for the club of subscribers he sent for the *American Agriculturist!* He is the happiest boy alive ; I would not have him without the knife, if I had to pay for *all* the subscribers he sent. I am going to *help* another of my boys get a list to send you, to obtain a Bracket Saw, and a Pocket Tool-holder. People complain of 'hard times,' but I really believe that the *American Agriculturist* will *help* them in the hard times, and that we shall do every one a favor whom we persuade to take and read the paper...."—That is only one of a great number of happy households, made so by the arrival of premiums from this office—the Tool Holder, the Microscopes, the Bracket Saws, the Pocket Knives, the Crandall's Blocks, the Gold Pens, the Big Dictionary, the Melodeons, etc., etc. It will do the boys good to exercise their business tact, and their persuasive powers in gathering lists of subscribers, and it will do the subscribers obtained good also. Let all the boys and girls keep at this work all winter. The Premium List, which every one can get free by sending here for it, pictures and describes many good premium articles for the little people, and older ones too.

Fun for a Winter's Evening.

The article in December, showing some ways for amusing a holiday party—which are as good at any other time—have caused some parents to ask for more. One asks for some simple tricks in which all of a party of young folks can join, and which will not need so much fixing beforehand, as the "giantess" and others. There is one, quite old, but no doubt will be new to many new readers, which will afford some amusement. It is

GUESSING AT A HAT.

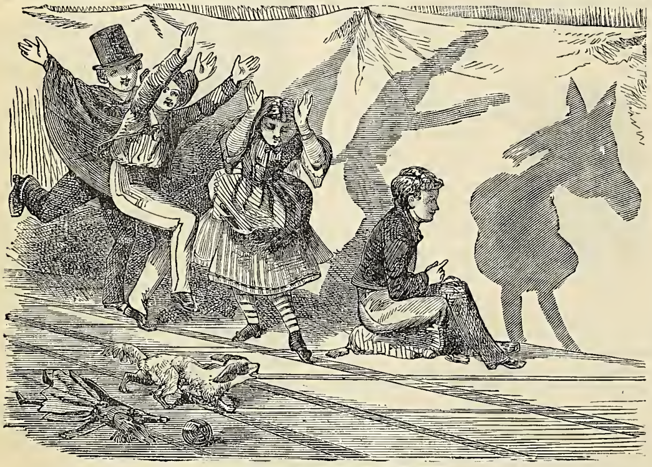
Pin a newspaper or other paper to a door or the wall, close down to the floor. Let the oldest boy put on a stiff or "stove-pipe" hat, or ask the father or older brother to wear it. Now let each one, in turn, mark with a pencil on the paper what he thinks is the hight of the hat. That is, if the hat were set upon the ground, mark where the top of the crown would reach upon the paper. The fun consists in placing the hat down—after all have made their guesses—and seeing how near, or more likely how far from, the real size the marks will be....Here is another quiet bit of amusement, which is really very astonishing to those who never have tried it. It is

TO SEE THROUGH A HOLE IN THE HAND.

Roll up a piece of paper or a pamphlet to make a tube about 9 to 12 inches long, and an inch or so across. Put this tube to your right eye, and look through it at some object, attentively, keeping both eyes open. Now hold up your left hand with its back toward you, and bring it near the lower end of the tube, looking at your hand with the left eye, while the right eye is fixed on something through the tube. If you hit the right position, which you can soon do, putting the edge of the hand against, *not over*, the lower end of the tube, you will be surprised to see a hole in your hand through which you can see very clearly the things beyond. It is a very easy but most surprising little experiment, and will please old as well as young people. You will of course wish to know why this is so, why there seems to be a hole through the hand when there is none. The scientific journals are talking about this, but their explanation would hardly suit youngsters. We usually look at the same thing with two eyes, and the two images make one in our mind. Here we separate the two eyes in an unusual manner, and the mind brings together the circle made by the tube for one eye, and the hand seen by the other, and makes one of them. You can use a card or a book instead of the hand, and see the hole in the same manner, but it is more surprising to look right through your own hand, as as if a clean hole had been cut through it. You can vary this in several ways. If, when looking through the hole in the hand, you stretch out your left thumb, so that it will be seen by the right eye through the tube, the thumb will appear to be directly across the hole in your hand. Instead of looking at the hand, use a card ; make a black spot on the card as big as a half dime, and look at it as before ; the black spot will appear to be floating in the center of the hole, with nothing to hold it there. Another variation is to make a round hole in the card of the size of the half dime ; look at this hole with the left eye, so that the real hole will be within the imaginary hole ; the hole will appear exceedingly bright, and surrounded by a ring of shadow.....Probably most of you have made shadows on the wall to please the baby ; by holding the hands in the proper position between the lamp and the wall, very amusing shadows can be made. On the same principle you can make a very lively and

AMUSING SHADOW GAME,

or "Shadow Buff," as it is called, only instead of one being blinded, and trying to tell who those who are caught are, by feeling their dress, hair, etc., the one who is *it*, has both his eyes open, and tries to guess who is who by their shadows. If there is no plain piece of white wall for the shadows, then hang up a sheet ; there should be but one lamp in the room, and this must stand where it will not get upset, and spoil the sport, and where it will throw the shadows of those who pass in front of it upon the sheet. The one who is to guess, is seated with his face to the sheet, and the rest go by one by one, and he tries to tell whose the shadows are. When one is guessed, he or she takes the seat, and the game goes on. The fun consists in trying to disguise the shadows, by holding the hands or arms, or parts of the dress in such a manner, as to make strange forms on the sheet. The engraving will show how this is done. Perhaps a better way is to hang the sheet over a doorway ; the one who guesses being on one side in the dark, while the others pass between the lamp and the sheet on the other side.



PLAYING THE GAME OF SHADOW BUFF.

The Doctor's Correspondence.

S. L. Richards among other things wishes to know about

JEWELS IN A WATCH ;

he asks what they are, and what is meant by a "full jeweled watch." Of course S. L. knows that there are several wheels in a watch. That each wheel has an axle through it, and the ends of these axles, called pivots, rest in holes or bearings, in the frame of the watch. The accuracy of the watch depends greatly upon having the parts move easily, and without friction ; these pivots are constantly in motion, and every means is taken to have them move as easily as possible. A pivot of steel moving in a brass bearing, will have less friction than in a steel bearing ; if it move in a bearing of diamond the friction will be very much less, indeed, as little as can be. Diamonds, rubies, sapphires, garnets, and other hard stones are used for the bearings of the pivots in watches, and are called "jewels." Diamonds are rarely used, as they are so difficult to work ; in the finest watches the jewels are usually rubies, and in the cheap ones rock-crystal, and even glass may be found. Some of the jewels are not larger than a pin's head, yet all these little things have to be ground and shaped, and have holes drilled to receive the pivots. In some watches only the pivot of the balance-wheel is jewelled, others have two or more holes jewelled, and when every pivot runs on a jewel, the watch is said to be "full jeweled." My friend R. is right in supposing that I can tell him about another matter, but as it does not belong to the Boys and Girl's Columns, I shall have to do it at another time and elsewhere. ....Master Johnston, in Northern New York, wishes to know how to build a hand-sled, and asks if he could not make one which his pony could draw. As to

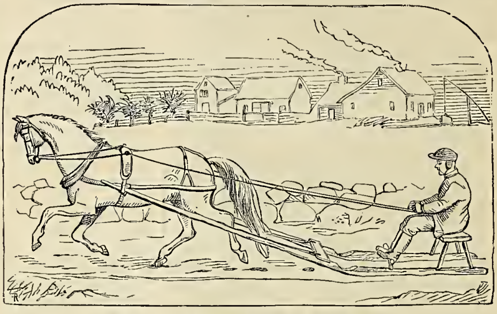


Fig. 1.—A JUMPER, MADE OF SAPLINGS.

BOY'S SLEDS,

there is an endless variety in these, some are regularly framed, runners and all, and have the runners shod with iron ; these are much like a small sleigh, and are of course very expensive ; the common ones are made with two pieces for runners, and a top. Snow does not often remain in the city long enough for boys to get much sledding, but when a snow does last a few days, I have seen boys with a sled made of a box, begged from the grocers. The bottom and two sides are all that are used ; the bottom of the box serves for the top of the sled, while the sides are cut down and rounded at the ends, to make runners. Not very strong or handsome, you would think, but the little fellows seem to get as much fun out of these rude box-sleds, as richer boys do with the best. Some time ago our friend Mr. Snook, sent us a sketch, showing how a farmer's boy could make a good and servicable sled ; his drawing is given in figure 2. On almost every farm is a pile of odds and ends, in which are put broken implements, parts of carts and wagons, and other things too good to throw away or burn, and which are kept, thinking they may sometimes "come in play." If a boy can find in such a place an old plow of which he can use the handles, he has a first rate start towards building a sled. The plow handles are generally of hard wood, well seasoned, and smooth. Cut off the handles about two feet, or so, from the bend, turn them points up, and you will have a pair of capital runners, which will slide almost as well as if shod with iron. For the sides you will need two pieces of inch board, two feet long, or of a proper length to suit the runners. It will make the sled look much better if you shape out the ends of the side pieces, as shown in the engraving. Then you must fasten the sides firmly to the runners .and here you must be

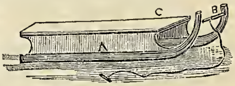


Fig. 2.—BOY'S SLED.

careful. Whether you use nails or screws, the hard wood of the runners must be bored for them, and this will take both patience and strength. When the sides are on, you will then make the top, and for this you must nail on the boards cross-wise, to make the sled strong. The width may be according to fancy, or the use you are to make of it. If simply to "coast" or slide down hill, a long and narrow sled is best, but if you wish to carry loads, you will need it wider. You can put a round stick in between the upturned points of the runners, to hitch a drag-rope to, but in coasting this will be in the way, and you can as well hitch two ends of a rope to the points of the two runners. I don't think you can manage very well to make a pony sled and a hand-sled in one. For the pony, perhaps, the best thing would be what is called

A JUMPER.

As I don't know how old my young friend is, I am not able to say whether he can manage to make a jumper or not. Farmer's boys, generally, learn to use an ax when quite young, and if our youngster can work handily with an ax or hatchet, he can very likely make a jumper. However, I will tell him about the jumper, and if he can not make it by himself, he can get some older person to help. By giving an engraving, fig. 1, you will at once see how it is made, and it will save much description. Two saplings of the same size serve for runners and shafts, and make up the principal part of the jumper. These should be of hard wood, if wanted to last. Having the young trees, both of the same size and length, care should be taken to smooth off all the knots, if there are any, and if you wish to be very nice, you can peel at least the runner part. As the shafts must be high enough to hitch to the harness, while the runners are flat upon the snow, they must be bent. This is done by cutting half way or more through each stick, and you can easily contrive a way to bend it. You will then need to fasten your sticks together at a proper distance to suit the pony. A piece nailed or pinned on in front of the bend, answers both to strengthen the jumper, and as a place to which to fasten the traces. Take care to have this strong, as much of the strain comes here. You can then put on another cross piece, as a foot rest, and make the seat serve to strengthen it still more, as it will, if made as shown in the engraving. You may, if you prefer, floor the whole over with boards, and use another kind of seat. Jumpers are so common over the border, where there is usually snow in plenty, that they are often called "Canada Jumpers," but they are also used a great deal in the States. A man can knock one together in a very short time, and there is no reason why a handy boy can not manage to make one. I hope my young friend will succeed in making a useful jumper, that it will be strong to avoid accidents, and that he will have many pleasant rides with his pony.

* * *

Aunt Sue's Chats.

Bettine.—The following formula will, I think, answer your requirements:

A	B	D	H	P
C	C	E	I	Q
E	F	F	J	R
G	G	G	K	S
I	J	L	L	T
K	K	M	M	U
M	N	N	N	V
O	O	O	O	W
G	R	T	X	X
S	S	U	Y	Y
U	V	V	Z	Z
W	W	W		
Y	Z			

Should a person wish you to find out a word or name, let him tell you in which of the upright columns the first letter of the word may be found; if it can be found in only one column, then it is the top letter; should it be found in more than one, then add together the alphabetical numbers represented by the top letters, and the sum will be the number sought. By taking one letter at a time in this way, the whole word can be discovered. For example: Take the word Darling; D is found in but one column, consequently is the top one. The same with A; R is in the second and last columns; the top letters of those are B, and P; these are the second and sixteenth of the alphabet, their sum is eighteen, and the eighteenth letter of the alphabet is R, the letter sought; L you will find in the columns headed D, and H, whose sum is twelve, and L is the twelfth letter of the alphabet. In this way, letter by letter, you can find out any given word.

For Chocolate Icing for Cakes—take half a pound of powdered loaf-sugar and two ounces of grated chocolate; put them into a sauce-pan with about a gill of water, and stir it over the fire until the mixture assumes the consistence of thick cream; then spread it over your cakes, and set them in the oven for two or three minutes.

Carpenter's Boy.—Not a bit of "trouble," my boy, you may "ask questions" every month if you choose, and I will answer them to the best of my ability. You want to know the meaning of the terms "four-penny," "six-penny," "ten-penny," etc., as applied to nails, "Four-penny" means four pounds to the thousand nails, "six-penny" *six* pounds to the thousand, and so on. It is an old English term and meant, at first, "ten-*pound*" nails (the thousand being understood); but the old Englishmen clipped it to "ten-*pun*"; and from that to ten-*punny*: and so it degenerated, until "penny" was substituted for "*pound*." So, when you ask for four-penny nails, now-a-days, you want those, a thousand of which will weigh four pounds; but in these degenerate times, I question whether you will get as many as a thousand in that weight. When a thousand nails weigh less than one pound, they are called tacks, brads, etc., and are reckoned by ounces (to the thousand); so you will see "8-oz.", "10-oz.", "16-oz.", etc., on papers of tacks. That used to puzzle me (before I knew better)—how eight small tacks should make one ounce, and sixteen much larger ones should make an ounce too! So I asked—just as you did. I am never ashamed to say "I don't know," unless I have neglected an opportunity to find out.

* * *

Aunt Sue's Puzzle-Box.

RHYMES.

(*Example.*—1. Here the ink has been spilled ——
2. By the gun it was killed ——. *Blot, shot.*

1. O! see the bright morning ——
2. Her fair head adorning ——
3. Delf, china, and iron ——
4. Neither panther nor lion ——
5. More than one, less than three ——
6. Too choice 'tis, for me ——
7. In the stable I live ——
8. A great fright I give ——
9. You oft rise by me ——
10. In her dress, do you see! ——
11. Here the tiger lies down ——
12. Green, speckled with brown ——
13. How much must I pay ——
14. I venture to-day ——
15. In caution I'm seen ——
16. And I'm pretty lean ——

ALPHABETICAL ARITHMETIC.

```
R D H ) C T U I L N ( U B U C
        C B N
        -----
          R I I
          R D H
          -----
            I B L
            C B N
            -------
            U D T N
            B I N U
            -------
              U B U
```

PI.

Thymauni si het prelucia sitaccerichart fo tager dimns.

CHARADE.

My first needs no delight its nature to show,
My next is two-thirds of a dwelling,
My third is oft felt in the air, and we know
That destruction its pathway is telling.

To England pray go, if my whole you would meet,
And list to its musical lays,
For indeed you will find it a songster most sweet,
E'en poets have sung in its praise. H. W. Otis.

NUMERICAL ENIGMA.

I am composed of 69 letters:

My 10, 40, 19, 3, 52, 44, 30, was the scene of a European battle, where an army of ninety thousand men, commanded by my 27, 53, 12, 56, 24, 61, 50,—25, 2, 19, 39, was defeated by an 9, 24, 66, 54, of thirty thousand.

My 22, 9, 14, 44, 58, 15, 13, 67, is the name of a famous battle, which decided the fate of my 38, 28, 20, 23, 49, 53, 37, 33, who died at my 7, 18,—43, 56, 11, 69, 38, 61.

My 47, 65, 66, 1, has been something sung just before going to battle.

My 60, 26, 46, 8, 16, 64, 27, 35, 5, 6, is a name dear to Americans.

My 17, 34, 45, 62, 57, 27, 19, 42, was a noted naval officer in the late war.

My 19, 21, 27, 68, 48, 59, 51, was a distinguished military officer in our late war.

My 4, 1, 29, 32, 36, 48, 55, 31, represent many of the United States.

My 20, 63, 45, 41, 31, is a famous city in Europe.

My whole is a prophecy of peace. M. O. Colcord.

ANAGRAMS.

1. Oh! had boy!
2. Surf free.
3. A scalp-den.
4. Rain came.
5. Sure leap.
6. I'm Kate's.
7. Scan any one.
8. Inform us.
9. Rough, hot fare.
10. Send rats in mud.

Xantho.

POSITIVES AND COMPARATIVES.

1. A ton,—a servant. 2. A coin,—the middle. 3. A body of water,—to reflect. 4. An animal,—more novel. 5. A vehicle,—a butcher. 6. A boat,—to cleanse.

Bessie.

CONCEALED SQUARE WORD.

Bring a wide apron with you; one a trifle long at each side. W. L. E., Jr.

CROSS WORD.

My first is in cloud but not in sky,
My next is in swim but not in fly,
My third is in man but not in boy,
My fourth is in marble but not in toy,
My fifth is in work but not in play,
My sixth is in moment but not in day,
My seventh is in sound but not in tone,
And my whole is the name of a precious stone.
Alice S. Paul.

* * *

ANSWERS TO PUZZLES IN THE DECEMBER NUMBER.

Numerical Enigma.—Thanatopsis.

Concealed Capes.—1. Clear. 2. Henry. 3. May. 4. Land's end. 5. Good Hope. 6. Horn. 7. Fear.

Cross Word.—Madrid.

Square Word.	Double Acrostic.
A S P E R	H— al —L
S T A V E	O—ttaw—A
P A L E S	L—edge—R
E V E N T	L— ila —C
R E S T S	Y— out —H

Anagrams.—1. Magazines. 2. Arrangements. 3. Gardening. 4. Companions. 5. Jealousy. 6. Barbarisms. 7. Numbering. 8. Opportunity. 9. Cultivators. 10. Refinement.

Transpositions.—1. Pets, pest, step. 2. Mate, tame, team, meat. 3. Arm, ram, mar. 4. Veal, lave, vale. 5. Abel, able, bale, beal. 6. Naps, span, pans. 7. Now, own, won.

Flowers and Vegetables.—1. Hollyhock. 2. Pumpkin. 3. Marigold. 4. Sunflower (son-flour). 5. Onion. 6. Corn. 7. Carrot (par*rot*). 8. Butter-cup.

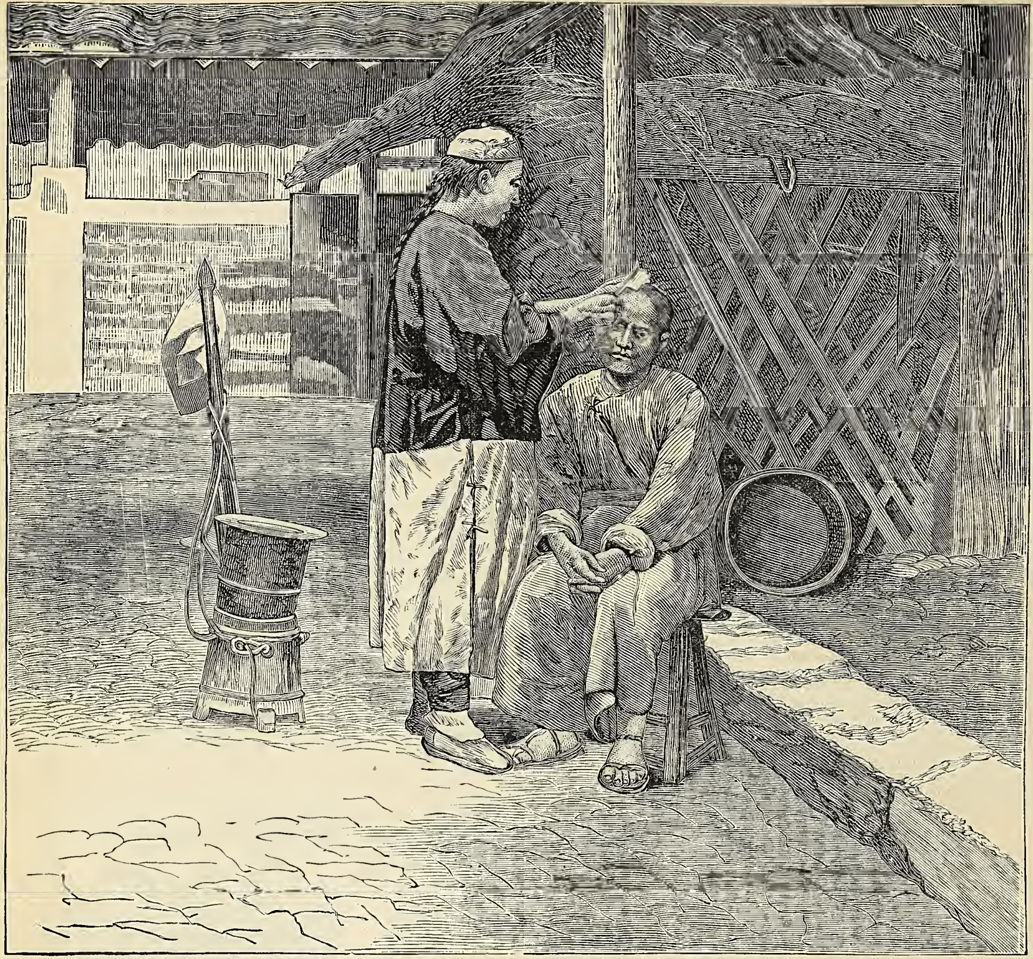
Pi.—What wondrous life is this I lead?
Ripe apples drop about my head,
The luscious clusters of the vine
Upon my mouth do crush their wine,
The nectarine and curious peach,
Into my hands themselves do reach.

Thanks for letters, puzzles, etc., to Dan. F. G., Sophie, J. F. D., Alpha and Bet, M. T. Hedd, Gus, Maggie, and Effie G.

* * *

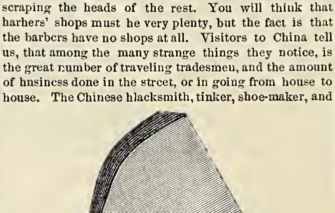
How Things are Done in Other Countries.—Dressing the Hair.

Quite a long jump, you will think, from bread-making to hair-dressing; but in telling you about common things in other countries, where their ways are different from our ways, we do not need to follow any regular order. It is a very curious fact, that there are scarcely any people, even the very lowest and least civilized, who do not do something to the hair of the head or face. There is much about hair, the manner of its growth, and the way it looks under the microscope, that is interesting, but we can not talk about these at present. Of course, the first use of hair is to protect the head, as well from heat, as from cold; another use is as an ornament; ornament has its uses, else there would not be such a variety in hair on both men and beasts. Animals covered with feathers instead of hair—the birds—are the most highly ornamented of all, and we are very sure that all the beautiful variety they display, is not without its uses. Compare a person with a fine head of hair, with one who is bald, and you will hardly doubt that hair is for looks, as well as for comfort. In ancient times the different nations and tribes had their fashions in hair, as do those of the present day. The ancient Greeks and Hebrews admired long hair, while the ancient Egyptians did not like it at all, but removed all the hair, and wore light wigs. Fine hair was thought so much of in olden times, that plucking out, or tearing the hair, was the way of showing the greatest possible grief. Among civilized people there have been curious customs. Some two hundred years ago a French king had a deformed shoulder, which he hid by means of an enormous wig, the bottom of which was so long as to cover his defect. Of course, this made wigs fashionable, and they were generally worn; they were often made of silk, and so large as to reach half way down the back. In early times, in this country, our great grandfathers, and their fathers, followed the ways of England, and the judges, governors, and all great dignitaries wore enormous horse-hair wigs. The war of the revolution put an end to all that here, though in England the custom is still kept up, and you will see in the illustrated English papers pictures of public occasions, in which judges, mayors, and all the rest have these ridiculous horse-hair head-coverings; even in the courts at the present time, in England and its Colonies, a lawyer puts on a black gown and a horse-hair wig, to address the judge, who sits gravely decked in what seems to us such senseless "toggery." It is no wonder that in London slang "big vigs" is the name for the dignitaries. With us short hair is the general rule for men, and long hair for women, but with many tribes of Indians the opposite is the custom; the men pride themselves on their long locks, while the women, as is often the case, cut their hair on a level with the eyes, and look droll enough. Speaking of the treatment of the hair by Indians, reminds us of a curious custom among the tribes of Arizona and New Mexico. When we first went among them, we found several of the men with the most singular head-dresses; a sort of turban on



THE BARBER IN CHINA, SHAVING THE HEAD.—*After a Picture in the Illustrated London News.*

top of the head, larger than the head itself, and this turban was of clay. On inquiring into the matter, we found that when the Indian finds his head too *populous* for comfort, for Indians are rarely free from insect parasites, (you must look that up in the dictionary)—he mixes up clay like mortar, and plasters his head as full as possible, winding it around on top of his head, and covering all with clay. This is worn for several days, or until the clay dries—and very uncomfortable and top-heavy it must be—when the clay is beaten and washed out; the hair then shines as if it were dressed by a city barber, while the inhabitants of the head "die for want of breath." Among the hair-dressing customs of different nations, none are more peculiar than those of the Chinese, who shave all the head, except a tuft upon top; this is made to grow as long as it will, kept with great care, nicely braided, and as it is not often long enough naturally to please the taste of the owner, it is helped out by braiding in at the end a lot of long silk threads. This queue, or "pig-tail," as it is called by other people, is a matter of great pride to the Chinese, and the loss of it is dreaded almost as much as death. The proper shaving of the head is a matter of great importance with a Chinaman, and if one neglects this, he is looked upon by his neighbors as being in a bad way, and it is thought of so much consequence that he is reminded by the "authorities" that he must attend to his toilet. Of course, this is a kind of shaving that one can not well do himself, but must have done by another, and this makes the barber a very important man in China. As there are over three hundred millions of people in China, and every man and big boy must have his head regularly shaved, it will be seen that a large share of the people must be engaged in scraping the heads of the rest. You will think that barbers' shops must be very plenty, but the fact is that the barbers have no shops at all. Visitors to China tell us, that among the many strange things they notice, is the great number of traveling tradesmen, and the amount of business done in the street, or in going from house to house. The Chinese blacksmith, tinker, shoe-maker, and many others besides the barber, have no tools or stock in trade but what they can carry with them, and their shop is wherever they may happen to be. The engraving shows a Chinese barber serving a customer. He has his furnace of coal, and his pail of hot water; one is hung at one end of a bamboo stick, which goes across his shoulders, and the other at the opposite end, to balance; his towels, and all the rest of his outfit, are carried in the same way. When he reaches a customer the barber sets down his furnace, puts on the water, and sticks the pole up by them, as you see in the picture, and goes to work. We might give our arithmetical youngsters a problem, something like this: "If there are 100,000,000 heads in China to be shaved twice a week, and each used an ounce of soap a month, how many millions of pounds of soap are used for head-shaving in the Chinese empire in a year?" No doubt many of you could cypher it out very quickly, but as they don't use soap at all, you need not take the trouble! "No soap, how then can they shave?" you will ask. One of the uses of soap in shaving is to make the skin smooth, so that the razor will run easily, and not cut the skin, and for this the Chinese barber uses clay instead of soap. But what a razor!—you will think that there must be a mistake in the drawing. The razor is a very odd looking affair, quite as heavy as our razors, but different in shape. We have had one of these razors almost ever since we can recollect—probably brought home by an uncle who was captain of a ship that sailed to China. We never yet found a person who, upon being handed this razor closed, could guess what it was for. As the razor in the picture is of a different shape, we give an engraving of ours, that you may see what a droll affair it is. So you see, in looking about among different countries, even so simple a matter as shaving, is done by some people in a manner quite different from our own.



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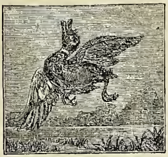

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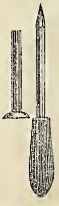

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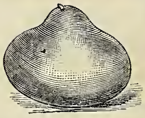

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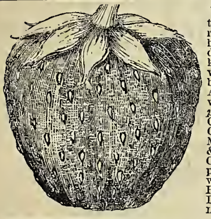

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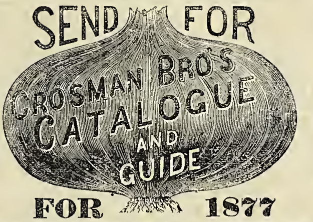

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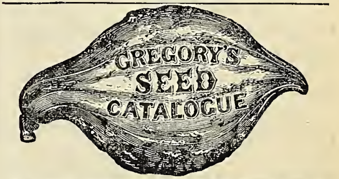

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[*Read the Table of Premiums in next column and the notes below it.*]

Explanatory Notes.
N. B.

Read and carefully Note the following Items: The next Table tells the *name* and *cash price* of each article, and, (in the last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.) (*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. You can have any time you wish up to next July, to complete your list....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion, at least, should be new names; it is partly to get these that we offer premiums to canvassers....(*f*) Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they should be used carefully and economically, and where they will *tell*....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk; otherwise it is not.

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TABLE of Premiums and Terms

For Volume 36–(1877).

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3	*Gents' Magic Charm Pencil (do. do.)*		$3 00	8	30
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5	*Gold Pen and Pencil, Telescopic Case, Elegant (do. do.)*		$5 50	13	37
6	*Centennial Magic Pencil (do. do.)*		$3 00	8	30
7	*Patent Telescopic Gold Pen and Pencil (do. do.)*		$6 50	15	45
8	*Knives and Forks (Patterson Bros.)*		$14 75	22	73
9	*Knives and Forks (do. do.)*		$18 50	28	95
10	*Carver and Fork (do. do.)*		$3 75	9	32
11	*French Cook's Knife, Fork, and Steel*		$3 75	9	32
12	*Pocket Knife (Meriden Cutlery Co.)*		$1 50	4	....
13	*Pocket Knife (do. do.)*		$2 00	6	22
14	*Pocket Knife (do. do.)*		$2 75	7	27
15	*Ladies' Pocket Knife (do. do.)*		$2 00	6	22
16	*Multum in Parvo Knife (do. do.)*		$3 50	8	30
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20	*Crandall's Masquerade Blocks*		$1 00	3	....
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62	*Climax Apple Corer & Slicer (do.)*		$1 00	3	....
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64	*Bay State Apple Paring and Slicing Machine (Goodell Co.)*		$1 50	4	....
65	*Sewing Machine (Remington)*		$70 00	80	298
66	*Reid's Patent Butter Worker*		$10 00	18	58
67	*Family Scales (Fairbanks & Co.)*		$14 00	21	70
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96	*A* **$45** *Library do.*		$45 00	62	192
97	*A* **$50** *Library do.*		$50 00	68	207
98	*A* **$60** *Library do.*		$60 00	80	237
99	*A* **$75** *Library do.*		$75 00	100	282
100	*A* **$100** *Library do.*		100 00	125	360
101	*A Choice of Good Books. (See Description.)*		....		

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 49.

The Langshan Fowls.—"E. D. K.," Brenham, Texas. We distinctly stated, when we gave the portrait of the Langshan fowls, that there were *none in America*. Our impression is that the Black Cochin is so near to this fowl as to be practically the same. Certainly the Black Cochin, sold by R. Kirby, 12 Courtlandt St., New York, meets all the points of the Langshan.

Corn in Drills.—"G. B.," Dunn Co., Wis. The increase of crop in planting corn in rows instead of in squares, is 25 per cent. With the best farmers in the East this method is general. Our own fields, planted in this manner, have been freer from weeds than many of our neighbor's, who planted in check rows. The rows are generally three feet apart, and the seed may be so dropped to give one stalk every foot, or two stalks every 18 inches in the row.

Cribbing and Worms.—"A. K.," Fitzwilliam, N. H. Cribbing may very probably be an indirect consequence of worms in the intestines. The round white worms may be got rid of by giving half a pint of linseed-oil every morning for a few days; but a more effective treatment is to give one dram tartar emetic, half as much ground ginger, and sufficient linseed meal to make a ball with boiling water. This is put down the throat in the usual manner. After giving this ball every day for a week, give half a pint of linseed oil; then repeat the balls and the oil, and give a tea-spoonful of copperas, (*green* vitriol), in the feed every morning after that, until the horse recovers.

Cause of Heaves.—"P. G.," Portland, Oregon. One frequent cause of heaves in horses, is the dust from over ripe or mildewed hay: this causes irritation, which finally ends in debility of the nerve which controls the action of the respiratory organs. The disease may be greatly relieved, if not cured in time, by cutting the hay and wetting it before feeding it, and giving no dry feed whatever. Occasional doses of half an ounce of copperas, with equal quantities of ginger and gentian roots powdered, are helpful temporarily.

Floor for a Stable.—"J. R.," Schoharie Co., N. Y. A water-tight stable floor may be made as follows. Lay dry, tongued and grooved, inch-and-a-half plank, with the joints put together with hot gas tar or pitch, for the first floor; saturate this thoroughly with hot tar, laying upon it a second floor of plank while the tar is hot. The seams should be well filled with the tar. No water will pass through this floor, and it will be very durable; the more so if the upper floor is well coated with hot tar and then sanded.

How to Apply Ashes and Salt.—"J. R.," Clinton, P. of O. Unleached ashes may be applied at the rate of 40 or 50 bushels per acre upon land that is full of weeds. The more vegetable matter there is in the soil, the more ashes it will bear. Salt may be used at the rate of 300 to 400 lbs. per acre. Sawdust is quite useless until thoroughly rotted. By mixture with liquid from the stables, it may serve as a useful vehicle for this valuable fertilizer.

Fowls Eating Feathers.—"L. H. C.," Hamilton, Va. At this season fowls have much idle time, and get into mischief in consequence. Being deprived of animal or nitrogenous food, they take as the best substitute the feathers from each other's necks. The remedy is to give them a sheep's pluck or liver to peck at, hanging it up within reach, and to give them wheat scattered in the earth or litter of their houses. This will give them food, and work to occupy their time.

A Famous Orange Tree died recently in France. The story goes that in 1421 the Queen of Navarre gave her gardener the seed to plant, and that this tree was the result. The tree managed to survive various removals, due to political changes, and was 455 years old when it died, having long been the largest and most fruitful tree in the orangery at Versailles.

"Sweeny in the Shoulders."—"J. W.," Washington Co., Oregon. What you call "sweenied in both shoulders," is a wasting away of the muscles of the shoulder blade, resulting from disease in the feet and legs, or sprain of the shoulder. To remedy the defect, the cause must be discovered and removed. It would be well to examine the horse very carefully, pressing every part of the legs and shoulder in turn, to find a tender spot, or the presence of heat and inflammation. When this is found it will indicate the seat of the trouble, and remedies may be applied. Rest will only increase the defect, and the animal should be exercised regularly, although it be lame.

Effect of Early Laying—Early Hatching.—"G. K. S.," Paterson, N. J. The laying of eggs now will have no tendency to "weaken the eggs" that are laid later. The effect of early laying is, that the hens become broody earlier than they otherwise would, and then stop laying. By having a stove in an airy room, chickens can be raised in February. The floor should be well sanded, and there should be a sunny window in the room if possible.

A Barren Cow.—"H." A barren cow should be fattened for the butcher; if she has failed to breed for two years, it is not worth while to keep her longer. A cow will consume her own value in feed if kept for one year and make no returns.

To Use Corn Stalks.—"J. H. C., Jr.," Cincinnati. If corn stalks are cut up in a fodder cutter with rollers that bruise them, and are then wetted and sprinkled with meal, they will be eaten by either cows or horses. That is, if the stalks were well saved and are in good condition. Feed at morning and night, and give no hay with them. The hay should be given by itself at noon. When thus treated, we have never found any difficulty in successfully using corn stalks.

The Use of Lime.—"A Subscriber," Chambersburg, Pa. The idea that heavy applications of lime to the soil are wasteful, is a correct one. A few years ago, we applied 60 bushels per acre to a 13 acre field near the house, and before long the water in the well, which was previously soft, became very hard. The lime was evidently dissolved in great part, and carried into the subsoil and lost to the crop. Many intelligent farmers use now 10 to 15 bushels per acre in place of 50 bushels, as previously used. When a field has been largely limed, much of the lime will be turned up in the bottom of the furrow at the next few plowings, showing that a large portion sinks into the soil. This is wasted to a great extent, and if five dressings, of 10 bushels per acre each, are applied in ten or fifteen years, or every two or three years, to the wheat and corn crop, instead of 50 bushels once in five years, as is usual, it would to our mind be just as beneficial as the large dressing, and much more economical. No exact rule can be laid down, because heavy soils will take more lime than light ones, not that they need it perhaps, but they hold it if given; but 10 bushels per acre could harm no soil.

A Dairy Journal.—"S. I.," Montgomery Co., Ohio. There is no journal published in the interest of the dairy especially, and there probably will not be, as special journals of such a character as a rule, cannot be made profitable to the publishers. The *American Agriculturist* contains as much relating to the dairy as any special journal probably could afford to give, besides all its other valuable contents.

Ventilation of a Smoke House.—"J. D. L.," Barton Co., Ga. But little ventilation is needed for a smoke-house; a smouldering fire that will make a dense cool smoke is what is wanted. If there are any openings needed for the admitting of air, to sustain the necessarily slow combustion, they must be very small, and may be at the bottom instead of at the top, where smoke only is wanted. Flies must be kept out by all means, and if any ventilating openings are made, cover them with fine wire gauze, and provide something to close them with when the fire is not used. To protect the meat, the house must be quite close and dark.

Toulouse Geese.—"D. L. C.," Jamestown, Pa. W. H. Todd, of Vermillion, Ohio, makes a specialty of raising all sorts of water fowl. The geese he exhibited at the Centennial were very fine indeed.

To Pack Eggs Safely.—"F. W. R.," Cuckoo, Va. To pack eggs safely for transportation, place them in layers in a box or barrel, with at least one inch of oats or finely cut straw or chaff between them. If sent in small quantities for hatching, have a flat box made and divided by partitions of thin stuff or pasteboard into separate cells; pack one egg in each cell, first wrapping in dry moss, cotton, or oat straw, in such a way that the wrapping cannot be displaced. A layer of the packing should be placed over the cells beneath the lid, so as to keep the eggs firmly in their places. We have known eggs to hatch perfectly well after 1,500 miles of travel, that were packed in a barrel with oats. Most of the failures to hatch are not due to the transportation so much as to infertility of the eggs from keeping the fowls shut up, from close breeding, or other causes.

Guernseys or Jerseys.—"J. Y. A.," Taunton, Mass. If we were to keep but one cow for family use, we would choose pure bred or a good grade Jersey, raised by some breeder who makes a specialty of breeding such cows. Mr. Thomas Fitch, of New London, Conn., makes the breeding of family cows a business, and breeds both pure Herd book stock and grades of Jersey cows. A good Guernsey is as good for butter as a Jersey, but the breed is not so popular for family cows.

Extension Ladders.—"G. H. G.," Rochester, Mass. The extension ladders as long as 30 ft. that we have seen, have three sections, the upper two raised by a cord and windlass arrangement upon the lower one. These are patented, and so are those used by or intended for firemen.

How to Feed Young Pigs.—"A. G. D.," Delaware Co., Pa. When milk is not to be procured for feeding young pigs, some care is to be exercised lest they be overfed with grain. A mixture of wheat bran, or coarse wheat middlings, with some crushed oats made into a thick slop or thin mush, would be greatly preferable to corn-meal. Linseed oil cake-meal at $40 a ton is too costly to feed pigs upon. A little of it as a change might be given with benefit.

How to Feed Old Sheep.—"M. G.," Lehigh Co., Pa. Examine the mouth of old sheep that will not fatten; perhaps the teeth are so worn down that the food cannot be perfectly masticated. When sheep become very old, it is sometimes impossible to put fat upon them, and then it becomes a question if the feed eaten does not cost more than the sheep are worth. If so, the proper course is obvious. Linseed oil cake-meal is good for fattening sheep, along with some clover hay.

Profit of Sheep Keeping.—"W. S.," Meriden, Conn. The profit from a flock of sheep, counting the increase, should be about 75 per cent. A skillful manager may make more than this. In the Western States, Kansas, Nebraska, Colorado, and elsewhere, the wool should pay the expenses, leaving the lambs as clear profit. The increase of lambs depends upon the management, but 75 lambs to 100 ewes are generally raised.

House for 1,000 Fowls.—"A. McE.," Eau Claire, Wis. No person experienced in poultry raising would build a house for 1,000 fowls. When crowded together in such numbers, fowls would inevitably die from disease. This number could be kept in six separate houses, such as are described in a little book entitled, "An Egg Farm," published by the Orange Judd Co., for 75 cents. If plans and specifications for these houses were needed they could be procured for a moderate sum from any builder.

Sowing Clover Seed on the Snow.—"F. S.," Meramec, Mo. If the ground is in proper condition, it will answer well enough to sow clover seed upon the last snow. But if it is not perfectly prepared, it will be better to wait and harrow the ground as soon as the surface is dry, and then sow the seed while the marks of the harrow-teeth remain. The seed will be covered by the earth settling down into the little furrows.

The "Florida Fever."—A correspondent in New England writes that his neighbors have the "Florida Fever" very generally, and wishes to know if we think he "could succeed in raising vegetables in Florida."—We receive numerous letters asking advice about moving, not to Florida only, but to various localities, but that seems to be uppermost at present. We would like to see Florida fill up with industrious cultivators, and we would be glad if every one of these correspondents could better his condition, but we must positively decline to give advice which shall induce any one to leave his present home and occupation, and go into a business about which he knows nothing, in a locality unlike, in almost every respect, the one to which he is accustomed. Those who recollect the California excitement know how easy it is to get up an emigration fever. This state of mind, in which everything favorable as to the project is magnified, and all that is unfavorable is overlooked, is not the proper one in which to decide on so important a move. We have not the least doubt that our friend can "succeed in raising vegetables" in Florida, but that is an unimportant point compared with what will he do with them when he has raised them. If he goes to a place where there is no regular and quick transportation to northern markets, he might as well open an ice-cream saloon in Greenland, for all the money he would make. There are many who can better themselves by going to Florida, but in going there or elsewhere, they should first visit their proposed new home, or let a company of neighbors send the clearest headed, most common-sensible of their number to visit it and report. Do not decide while the "fever" is on. Recollect that going to Florida will not change the *man:* the "ne'er do well" will be the same there as at home. In Florida, as at home, it is patient, well-directed labor that will tell. The best interests of that State do not call for people with the fever on them—they need people who, when they come, come to stay.

"The Tanning Plant Again."—"C. W. G.," Grama, Pa. The so-called "Tanning Plant," of Nebraska, Iowa, and other Western States, is *Polygonum amphibium.* To your question "would it not pay to get the seeds and try if it can not be profitably grown in the East?" we have already replied, by stating it grows in every Northern State, from the Atlantic to the Pacific. One form of it is truly aquatic, and found in ponds, while another flourishes in wet soil. We have no idea that it would in any case pay to cultivate it, but it is possible that in localities where it grows naturally in abundance, it might pay to gather it, and use it in the absence of other tanning materials. There are several plants vastly richer in tannin, that it would be preferable to try, if it would pay to cultivate any.

What "Sport" Costs in England.—Not long ago the "Mark Lane Express" gave the hunting statistics for one County only, that of Lancashire. It is estimated that there are in that County 20,000 hounds, harriers, and dogs of various kinds; 1,000 huntsmen; some 3,500 men employed in the stables and kennels, and that the annual expense to the masters is £350,000, or in round numbers $1,750,000. No account is here taken of the damage to farmers, or other incidentals.

Giving Credit for Plants.—As we do not know the rules under which the Royal Horticultural Society (Eng.) gives certificates for the introduction of new and meritorious plants, we can not complain of their action, but their rules must be wrong. Thus, among the certificated plants in 1876, we find *Eulalia Japonica variegata*, for which a certificate is given to Messrs. Veitch & Sons. If the certificate merely indicates who first introduced the plant into England, it is all right, but if the one who first brought it into *cultivation*, it is all wrong. We figured this Eulalia in Hearth and Home in 1871. It was introduced from Japan, some years before, by Mr. Thomas Hogg. It seems to us quite the reverse of fair, that other persons, who accidentally acquired the plant by purchase from some one to whom Mr. Hogg had supplied it, should stand on the records as having received a certificate for it. If the certificate only shows the plant was exhibited by the person who receives it, then the one who introduced it should be honored in some way. Mr. Thomas Hogg has added a great many fine plants to our collections, and has distributed many of them among plant lovers with a liberality most unusual. While others with his opportunities would have received a handsome sum for the plants, he has worked, like the true horticulturist that he is, without looking constantly through gold-bowed glasses, and we insist that, if he has not made money, he shall at least have proper credit every time that it is due.

Petroleum in Tobacco Culture.—It is a common custom to cover the tobacco seed-beds with brush, and burn it off, to kill the weed-seeds before sowing. According to the "Titusville Herald," petroleum is used for this purpose. It is applied evenly to the bed by means of a watering pot, at the rate of one gallon to 100 square yards, and then set on fire.

The Florida State Fair.—Florida is far in advance of other States with her fair, which will be held at Jacksonville on the 22th inst. This announcement is suggestive of the wonderful variety of climate our country presents. While the farmers in one part are enjoying their fire-side comforts, in another they are showing their best bananas, oranges, and pine-apples, and the products of the kitchen and flower-gardens.

Seeds and Sea-Water.—Experiments have been made in Europe upon the germinating power of seeds after an immersion of 13 months in sea-water. Out of 251 species tested, only three came up. These were Endive, Black Medic or Nonsuch, and an *Apium*, whether Celery or some other species is not stated.

How to be a "Professor."—One of the most eminent men we ever knew, a professor in one of our first colleges, and a M.D., also, did not like to have his friends address him as "Professor"; upon inquiry why he disliked the title, we learned that every day he passed a barber shop, where the barber's sign stated that he was a "Professor of the Tonsorial art." Indeed, the title of "Professor" has lost most of its former distinction. Once it was only given to the holder of a chair in a regular university or college. In some States it is now given to every school teacher, and it is used for all sorts of persons, down to boxers and bruisers, who are "Professors of the manly art of self-defence." Still we did not know how readily the title was acquired, until we saw the circular of some gimcrack sold by agents. In setting forth the inducements to undertake the agency of the thing, the "outfit" is described; the articles the outfit is to contain are enumerated, and include "one thousand circulars with your name (as professor if you wish) printed on them." The whole outfit costs only $30, and one can get a lot of gimcracks, and be a professor ("if you wish") besides.—Let us all be professors.

The Japanese Persimmon, *Diospyros Kaki*, fruited with Mr. G. F. Wilson. It was tried by the members of the Royal Horticultural Society—result a general pucker—only the account put it "wry faces." Such an indignity must be looked into, and *Kaki* was at once analyzed. Over 2 per cent of tannic acid found. Now we know what was the matter. Any Southern darkey would have said "dem 'simmins wasn't ripe." It must have been a very funny thing to have seen that august body with its mouth involuntarily in a whistling position. We doubt if this fruit will completely ripen in England. We tasted of the first fruit that matured here, and there was no trace of astringency.

Bitter Rot in Apples.—This difficulty appears to be on the increase, to judge from the inquiries that are made concerning it. Light brownish spots appear in the flesh of the apple, and these are of the most intensely bitter taste, while the unchanged portions are of their usual character. If any proper investigations have been made as to the cause, we have not heard of them. Cases are recorded in which manuring the trees has been followed by a recovery. So far as is known at present, we can only work on general principles; assuming that there is a lack of proper nutrition, it is safe to see to the general health of the trees. On poor soils apply manure, and on those apparently fertile, give lime, or ashes, or both. Until the precise cause is known, to apply special remedies will be working in the dark.

Fish Guano.—The Moss Bunkers, or Menhaden, are not caught, as many suppose, with the chief object of converting them into a fertilizer. Fish scrap or fish guano, a valuable fertilizer, is only a secondary product. The principal object of the business is the oil, which, since the decline in the supply of whale-oil, is now put to many uses for which that was formerly employed. After the oil is pressed out of the steamed fish, the residue, dried and ground, is put on the market as fish guano. There are now about 75 fisheries, in which some $3,000,000 are invested, and these employ 250 sailing vessels, 30 steamers, and nearly 4,000 men. The oil product of last year (1876) is estimated at 3,000,000 gallons, and that of scrap, or guano, at 40,000 tons.

Government Land in Florida.—"J. G. D.," Cambridgeport, Mass. There are a plenty of U. S. Government lands in Florida, subject to entry under the homestead act, on the same conditions as in the Western States: or a person can preempt, and pay $1.50 per acre. The cost of a homestead is only the office-fees and the expense of surveying, in all about $18 for 160 acres.

"The Illustrated Adelaide News."—Nothing more strikingly shows the wonderful progress made by that far off country, Australia, than to receive from there an illustrated monthly paper. Seven of its 16 pages, each nearly twice as large as this page of the *American Agriculturist*, are quite filled by engravings, not copied from English papers, but original, with a strong local flavor. If some of the engravings do not show quite so fine work as those in older journals, they are remarkably spirited in drawing, and highly creditable. Local shipwrecks, fights with the natives, hunting scenes, new buildings, and Australian scenes make up a variety, and two views of Australian exhibits at the Centennial, show an enterprise that deserves success.

Japanese Botany.—The Japanese are making such wonderful progress in adopting whatever is desirable in the life of other nations, that we forget that they had by themselves reached a high state of culture, which prepared them for this sudden advance. Thus, their plants have been studied by native botanists, and classified according to a system of their own, and their illustrated botanical works represent the plants in figures which show great skill and fidelity to nature. One of our pleasantest mementoes of the Centennial Exhibition, is a work presented by one of the Imperial Commissioners, containing specimens of the wood of 100 native trees and shrubs. Each species is represented by a cross-section, and mostly by two length-wise sections cut different ways of the grain. The sections, cut as thin as writing paper, are attached to the pages of a book; at the top of the page is printed, in English type, the Japanese name, the botanical name, according to our system, and that of the family to which it belongs. In a column at the right hand of the page, is descriptive matter in Japanese characters. The book has a very full index, and its reading matter *looks* very instructive. The whole forms a most interesting collection, the like of which but few other countries can show.

To Hull Clover-Seed.—"J. J.," Green Co., Wis. Clover seed may be thrashed and hulled in great part without a huller, by the following method. Take out the concave of a thrashing machine, and replace it with a piece of oak plank in which grooves have been plowed lengthwise with a gouge, chisel, or a grooving-plane. Feed the clover into the machine so as to keep it crowded full, and hang a bag in front of the discharge to keep the chaff from leaving the machine freely. This will cause a great deal of rubbing in the machine, by which most of the seed will be hulled. Clean with the fan, with a light draft, or toss the chaff with a fork or rake, and rake-off the top, keeping the bottom for sowing. Or else thrash and rake off the coarse chaff, and sow the fine chaff, in which all the seed will be found.

Fistula on the Jaw.—"F. A. P.," Blue Earth Co., Minn. The difficulty of healing a running sore upon the face of an animal, is probably due to a disease of the bone beneath it. To reach this, through a very small pipe inject a few drops of Carbolic Acid in a spoonful of water, by means of a small common syringe. Do this twice a day, until the discharge ceases, then inject a few drops of Compound Tincture of Benzoin, twice a day, until the hole closes. If this does not succeed, open the hole with a knife, down to the bottom, and then treat it as above, keeping a plug of lint in the opening until the bottom heals.

Spavin Cure.—"R. S. E.," Talbot Co., Md. It is impossible to say what may be the effect of any application for spavin, without knowing of what the remedy consists. But it is very safe to say that no remedy whatever can be expected to succeed in all cases, and anything that is claimed to cure every case to which it is applied, will fail to do what is promised. There are some cases of spavin, such as when the bony growth is fully formed, that can never be cured by outward applications.

Small Farm Grist Mills.—"W. D. R. M.," Savannah, Ga. The various mills illustrated in the *American Agriculturist* recently, are made of different sizes, some of them small enough for hand-power. To procure one to suit, write to the manufacturers, whose cards appear in the *American Agriculturist*, for catalogues with prices, and select what seems most suitable.

Difficulty of Breathing in a Horse.—"F,," Warren Co., Ohio. When a horse breathes with difficulty while working in harness, it may indicate a disease of the lungs, or a pressure of the collar; which it is, may easily be tested. As the horse is hide-bound, and troubled with some affection of the kidneys, it is more probable that the difficulty of breathing originates in a general poor condition of health; this may arise from indigestion, or there may be tuberculosis of the lungs. It might be well to give him a pint of linseed oil daily, for a few days, to clear the bowels, and then feed bran-mashes, with crushed oats and linseed meal, mixed with cut hay moistened. One ounce of ground gentian root might be given in the night's feed. If tuberculosis or consumption is the cause, there is no help for the animal.

Catalogues Received.

The Catalogues for the spring trade have already began to appear. If any dealers who have sent their lists fail to find them enumerated below, it is because they came to hand too late. The paper goes to press on the 15th of the preceding month, and Catalogues that did not reach us by Jan. 15th must lie over until March.

NURSERYMEN.

Charles Black & Bro., Hightstown, N. J. General stock of fruit and ornamental trees, with special attention to peaches.

John S. Collins, Moorestown, N. J.—A full list of small fruits, peach and other fruit-trees, and berry boxes and crates.

Robert Douglas & Sons, Waukegan, Ill., offer tree seeds, and evergreen and other forest trees either as young seedlings from the seed bed, or several times transplanted, and several years old.

P. H. Foster, Babylon, (L. I.) N. Y.—General fruit and ornamental trees, hedge-plants, etc.

A. Hance & Son, Red Bank, N. J.—A select retail list of fruit-trees and small fruits, describing novelties, especially among peaches, raspberries, and strawberries.

E. W. Krause, Waco, Texas.—Fruit and ornamental trees, small fruits and flowers, selected with reference to the climate of Texas.

D. S. Marvin, Grape-vine Nursery, Watertown, N. Y. A special list of grapes selected for a northern climate.

E. P. Roe, Cornwall-on-the-Hudson, N. Y., sends a compendious circular of strawberries, raspberries, and other small fruits, which gives useful talk about them, and their prices.

SEEDSMEN.

W. H. Carson, 125 Chambers st., New York, sends out his first catalogue, which is as neat as a row of new pins. In both vegetable and flower seeds he judiciously confines himself to a selection of the best. A Calendar of Operations and various tables increase its usefulness.

J. A. Foote, Terre Haute, Ind., has the leading varieties, and makes a specialty of the "100 days Tomato," noticed elsewhere.

David Landreth & Sons, Philadelphia, Pa.—This long-established house enjoys a reputation which each year confirms. Their "Rural Register and Almanac" is as fresh and useful as ever, and not the less so because it contains their price list.

J. M. Philips, Mercersburg, Pa. A catalogue of seeds largely grown by himself, with directions for culture.

J. B. Root, Rockford, Ill.—Before the sudden death of Mr. Root, mentioned last month, he had prepared his "Garden Manual and Catalogue," which is as fresh and useful as ever. The business will be continued by Mrs. Root, aided by his long-time foreman.

R. H. Shumway, Rockford, Ill., has an abundantly Illustrated Catalogue, with cultural directions, largely of seeds of his own raising, which, from the array of testimonials, have pleased many persons.

Charles Sizer, Mount Lebanon, Columbia Co., N.Y., sends his catalogue of Shaker's seeds. It is well illustrated, in clear large type, on fine paper, with no air of antiquity about it, yet we are informed that the establishment dates back to 1795. Mr. Sizer can go to the head.

J. M. Thorburn & Co., No. 15 John st., N. Y., send their annual catalogue of vegetable, agricultural and tree seeds, which is as full and concise as usual. It is very full in grass seeds, with descriptive notes.

James Vick, Rochester, N. Y., sends out so many publications that it is difficult to keep the run of them. The one before us is a catalogue purely, well illustrated, exquisitely neat, and as full as it can stick.

FLORISTS.

Bellevue Nursery Co., Paterson, N. J., H. E. Chitty, Supt. A full stock of greenhouse and bedding plants, with novelties, and a general vegetable & flower-seed list.

Benj. A. Elliott & Co., Pittsburgh, Pa.—Greenhouse and bedding plants, sent in collection or singly.

Greenbrook and Paterson City Nurseries, Paterson, N. J., send a comprehensive business card of greenhouse stock, upon the opposite side of which is a calendar surrounded by a handsome border of flowers.

Tyra Montgomery, Mattoon, Ill., sends two lists, one of a general collection and one of roses, which have long been a specialty at this establishment.

Thomas Pray, Jr., Central Falls, (which is a suburb of Providence), R. I., offers bedding plants, select ornamental trees and flower seeds.

IMPLEMENTS, MACHINERY, FERTILIZERS.

W. H. Bowker & Co., Boston, issue a catalogue of special fertilizers, expressly prepared for all crops which have been satisfactorily tested; including wheat, corn, oats, potatoes, grass and vegetables. Also of the Brighton Fertilizers made from blood, bone and refuse meat from the Brighton Slaughter-houses. These are warranted pure. Catalogues sent free by mail.

Deere & Company, Moline, Ills., keep the farmer advised of their excellent plows and cultivators, by furnishing him with a pocket almanac, memorandum and expense book—both neat and useful.

Leonard & Silliman, Bridgeport, Conn. Burr-stone Mills of various sizes, and Flouring and Grist-mill machinery in general.

Whitman & Burrell, Little Falls, N. Y., manufacture the Economizer Return Flue Boilers and agricultural engines, also a Steam engine and Pump combined, which will raise 30 gallons of water per minute. These machines are in extensive use and are highly recommended.

Nason Manufacturing Co., 71 Beekman and Fulton sts., New York. Iron pipes, steam fittings, steam heaters, and Blunt's Universal Force Pumps, also steam engines and a great variety of similar articles.

EUROPEAN CATALOGUES.

GREAT BRITAIN.

Waite, Burnell, Huggins, London, Eng.—This promising young seed house—only about 300 years old—send their wholesale list, which is as neat and full as usual.

Wilson & Rankin, Glasgow, Scotland.—A wholesale list of garden and agricultural seeds, especially grasses.

BELGIUM.

Auguste VanGeert, Gand.—A catalogue of over 150 pages of stove, greenhouse and hardy flowers.

J. Van der Swaelmen, Gendbrugge-Gand, makes Lilies a specialty and offers a great variety.

FRANCE.

Louis Leroy, Angers.—This catalogue is as usual full of everything kept in any nursery

Vilmorin, Andrieux & Co., Paris, send their general seed catalogue for 1877, and a special list of novelties in vegetable and flower seeds.—Messrs. Pabst & Esch, 11 Murray st., N. Y., are agents for both these French houses.

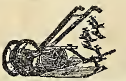
PRUSSIA.

Ernst Benary, Erfurt.—A list of vegetable and flower seeds, with many novelties from a house noted for the excellence of its products.

Frederich Adolphe Haage, Erfurt.—Vegetable, flower, tree and other seeds in immense variety.

Haage & Schmidt, also of Erfurt, which is a great seed center, require nearly 200 pages for seeds, and another large catalogue for ornamental plants of all kinds.

ALLEN'S PLANET Jr. SILVER MEDAL

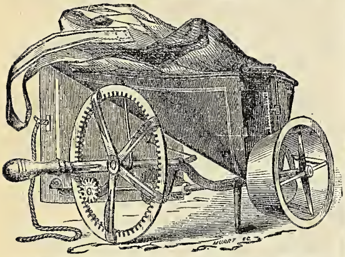


Hand Seed Drills and Wheel Hoes, have also been awarded the **Centennial Medal** and **Diploma**, and the *Medal* of the *Great Horticultural Exposition, held at Erfurt, Germany*, besides a large number of *First* Premiums at State and County Fairs. Full Descriptive Catalogue of our whole line of goods *free*. Including our *Wrought Frame Horse Hoe, "Iron Age" Cultivator, Paris Green Duster, Hand Garden Plow, Transplanting Hoes, Corn Knives, etc. Every Farmer* should have a copy, and we want **a live agent** at work, or a club formed in **every town.** Send for **new** terms.

American Agriculturist Premium. **S. L. ALLEN & CO., 119 S. 4th St., Philadelphia, Pa.**

Cahoon's Broadcast Seed-Sower

is the only practical Broadcast Grain and Grass-Seed Sower known.



It is now sold in all grain-growing countries. The Hand-Machine will sow 50 acres of wheat, or 30 acres of grass-seed in 10 hours, and do the work far better than it can be done by any other means whatever. These machines have been uniformly sold for the past 10 years for $10 a piece, but now we have reduced the price to $5 a piece, and our sales have already increased astonishingly. Send stamp for circular.

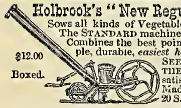
GOODELL COMPANY,
Sole Manufacturers, **Antrim, N. H.**

Matthews' Garden Seed Drill

Is the latest production of the inventor of the **Holbrook "Regulator"** and other drills, and is the best in use. It has been **further improved for 1877.** Send for descriptive circular. Manufactured only by

EVERETT & SMALL,
Boston, Mass.

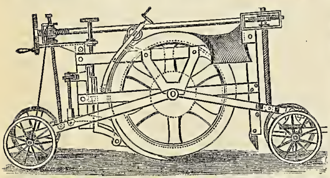
Holbrook's "New Regulator" Seed Drill



$12.00 Boxed.

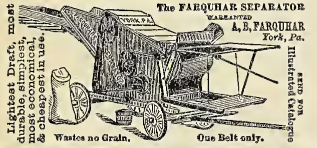
Sows all kinds of Vegetable Seeds with regularity. The STANDARD machine. REMODELED for 1875. Combines the best points ever produced. Simple, durable, *easiest handled*, OPEN WHITE SEED CONDUCTOR SHOWS THE SEED DROPPING. Give satisfaction. Circulars Free. Made by E.E.LUMMUS & Co. 20 S.Market St. Boston, Mass.

Ditcher and Excavator.



RANDOLPH'S PATENT.—Simple, durable, effective. The work of 50 men with 4 horses and 2 men. Makes Tile and Open Ditches.

STEAM EXCAVATORS.—For Roads, Railroads, Levees, and Canals.—Will dig and deliver at cost of one cent per cubic yard.—Easily cared for and worked.—For circulars, etc., address **Randolph Bros.**, Agents,
111 BROADWAY, NEW YORK.



The FARQUHAR SEPARATOR
WARRANTED
A, B, FARQUHAR
York, Pa.

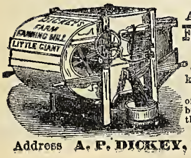
Lightest Draft, most durable, simplest, most economical, & cheapest in use.

Wastes no Grain. **One Belt only.**

SEND FOR Illustrated Catalogue

Horse Powers and Threshing Machines of all kinds a specialty. Send for large Illustrated Catalogue.

The Best Fanning Mill in the World.



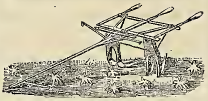
BUY THE
A. P. DICKEY
Fanning Mill.

No good Farmer can afford to market dirty grain.

A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

Address **A. P. DICKEY, Racine, Wis**

Prout's Hoeing Machine.



This new labor-saving machine will hoe tobacco and cotton BETTER than can be done by hand, and corn, potatoes, etc., better than is usually done by hand-hoe. Will pay for itself in one year in hoeing 10 acres of tobacco and cotton, or 20 acres of corn or potatoes. Price, $30. For further information address

THE BELCHER & TAYLOR AG'L TOOL CO.,
Chicopee Falls, Mass.

Also manufacturers of the Self-Sharpening, Lion, and other Feed-Cutters, Corn-Shellers, Plows, Bullard's Hay Tedders, Balance Rakes, etc., etc.

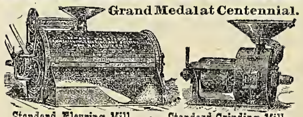
BOGARDUS'S PATENT Universal Eccentric Mills

for **Grinding Bones, Pot Shells, Ores, Old Crucibles, Fire Clay, Guanos, Oil Cake, Feed, Corn and Cob, Tobacco, Snuff, Sugar, Salts, Roots, Spices, Coffee, Cocoanut, Tomatoes, Saw-dust, Flax Seed, Asbestos, Mica, Horn,** etc., and whatever can not be ground by other Mills. Also for **Paints, Printers' Inks, Paste, Blacking,** etc.

JOHN W. THOMSON, Successor to JAMES BOGARDUS,
Cor. White and Elm Sts., New York.

HARRISON'S MILLS

Grand Medal at Centennial.

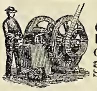


Standard Flouring Mill.	Standard Grinding Mill.
Cleaner Grinder and Bolter.	For all substances wet or dry.
Ordinary size, 9 feet by 4 feet	Built of burr stone and iron.
Capacity 5 bushels per hour.	For heavy or light power.
Finest flour, largest yields.	10,000 in operation.
Cooled by a strong air blast.	Grind 75 bushels per hour.
Runs at one-tenth the cost	Thickest French burr stones.
Of the old style mills.	Double discharge spouts.
Compact, practical,	Adjustable babbitt boxes.
Substantial, and very durable.	Solid self-adjusting burrs.

These Mills excel all others, even compared with those of double the size, double the weight, and double the price.

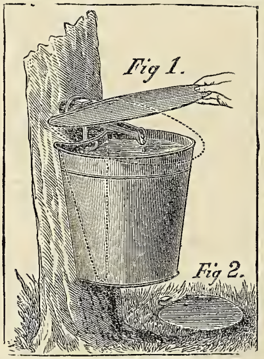
EDWARD HARRISON, Patentee and Sole Manufacturer,
135 Howard Avenue, NEW HAVEN, CONN.

BLAKE'S PATENT Stone and Ore Breaker



Crushes all hard and brittle substances to **any required size.** Also, any kind of STONE for ROADS and for CONCRETE, &c.

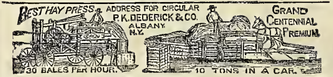
Address BLAKE CRUSHER CO.,
New Haven, Conn.



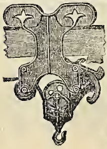
Agents Wanted. Post's Patent Sugar Fixtures.

Descriptive Circulars with Samples of **EUREKA SAP SPOUTS**, and price-list, sent post-paid for 20 cents. Address,

C. C. POST, Burlington, Vt.



The Anti-Friction Hay Carrier



Saves labor and money. It is simple; the grappling positive; it runs on friction rolls, hence will come back on slight incline. The track is inexpensive; the carrier costs but a trifle; many hundreds are in use. No trouble about getting over high beams, or to the end of deep bays. Hay is dropped where wanted, and the work of mowing is reduced. **Track should be put up now while barns are full.**

Send for circulars and designs for tracking barn, to **U. S. Wind Engine & Pump Co., Batavia, Ill.**, manufacturers of the Old Reliable Halladay Standard Wind Mill.

SPAIN'S PATENT CHURNS.

Centennial Medal Awarded

In use over 25 years.

Removable Dasher.

Made of White Cedar with galvanized hoops.

Send for circular and prices.

CLEMENT & DUNBAR,
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HALLADAY STANDARD.

The first Self-Regulating Wind Mill offered the markets of the world, and when material used, workmanship, power and durability are considered, it is acknowledged to be

THE CHEAPEST.

It has been manufactured under immediate supervision of inventor for more than twenty-two years.

$3,000,000 Worth NOW IN USE.

A 58 page Illustrated Catalogue with Price List will be sent free to all who make application.

Agents wanted in all unassigned counties.

U. S. WIND ENGINE & PUMP CO.
BATAVIA, ILL.

THE CELEBRATED Dexter Spring

Is one of those inventions that commends itself to the **PRACTICAL MAN** as the **COMMON-SENSE SPRING**, being a side-spring without the unpleasant and dangerous side motion of the Concord, and obviating the jerking of the Elliptic. Being without perch, gives independent action to each wheel, making them much more durable. The **SPRINGS** are made of special **CRUCIBLE STEEL**, and are fully warranted.

The **DEXTER** supplies a want long felt by the **Farmer, Business Man,** and **Physician**, as it gives them the easiest riding and most durable **SPRING VEHICLE** known, and much less liable to break than the ordinary spring, on account of quality and form.

Please examine carefully the editorial and advertisement in Dec., 1876, *American Agriculturist*, and send for circular to

DEXTER SPRING CO.,
Hulton, near Pittsburgh, Pa.

AUTOMATIC WAGON BRAKE

The most powerful self-acting brake made, and yet is more simple and complete than any ever introduced for general use. The Brake has been fully endorsed by every farmer who has seen it operate. W. A. Armstrong, Sec'y Elmira Farmers' Club, writes: "A Committee of the Elmira Farmers' Club, consisting of Chas. Heller, John Bridgman, D. T. Billings, S. M. Carr, and M. H. Thurston, gentlemen fully competent to make intelligent judgment, gave the brake careful trial Aug. 21st, and reported unanimously: It is the best brake we have ever seen—prompt in its action—effective when required, and is exceedingly desirable for all farmers on hilly farms." See Illustration in Aug. *Am. Agriculturist.* Town, County, and State rights for sale. Please say where you saw this.

D. L. MULFORD, General Agent,
TIOGA, TIOGA CO., PA.

A long felt Need supplied.

The **SENSIBLE COLLAR PAD** is just what its name suggests, a perfect Leather Pad, combining the advantages of Firmness, Elasticity, and the medicinal properties of tanin. No pad ever before introduced gives such universal satisfaction. They are warranted to cure sore necks and to prevent galls. Ask your harness maker for them. Manufactured by the SOLE LEATHER PAD CO., of Olean, N. Y.

250 MARYLAND FARMS, in Tracts from 30 to 300 acres.

Near railroad and navigable Salt-water (with all its luxuries), in Talbot Co., Md. Climate mild and healthy. Titles good. New Pamphlet and Map showing *location*, free.

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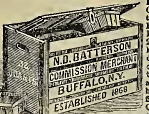
CHEAP VIRGINIA FARMS

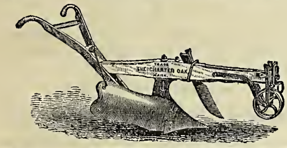
CATALOGUES SENT FREE.
CHAFFIN, STAPLES & CO., Richmond, Virginia.

BEST AND CHEAPEST BERRY CRATES AND BASKETS



In use. So acknowledged by leading Growers everywhere who have used them for years. A. M. Purdy, Editor Fruit Recorder, and large fruit grower, Rochester, N. Y., writes: "Purchased 200 N. D. Batterson's Crates and Baskets, and must say, for compactness, durability, lightness, neatness and free circulation of air, have never found their equal." Well made; best materials, sizes and shape; Crates are iron bound, have best hasps made; Baskets fit nearly all other crates, can be nested. Order by freight immediately; delay occasions loss. Remit by registered letter with order. Greatest satisfaction guaranteed. 32 qt. Crates, complete, 24 in. long, 12 in. wide, 15½ in. high, $1.35; 36 qt. Crates, 24 in. long, 17½ in. wide, 12 in. high, $1.40; 30 pt. Crates, complete, 24 in. long, 10 in. wide, 10½ in high, $1. Quart Baskets, $15 per 1,000; Pint Baskets, $10 per 1,000, in any quantities.

THE CHARTER OAK SWIVEL PLOW.



THE ONLY PERFECT SWIVEL PLOW.

ORONO, ME., Aug. 16, 1875.

Dear Sir:—We have to-day tested, by actual trial, the efficacy of the Charter Oak Swivel Plow that you sent me some weeks since. It was used on dry, stiff loam grass land. The ground was somewhat sloping, and the furrows were turned up the slope. I expected a failure, and seemed likely to realize my expectations as the furrow slice would slip over the end of the mold-board, and fall back into the furrow. It then occurred to me to try the effect of expanding the brace that held the mold-board in position. This done, the mold performed its work admirably, completely inverting the furrow-slice, and leaving the bottom side up with ease.

I have long doubted the possibility of constructing a swivel plow which would do good work on level or slightly undulating land. I am no longer faithless, for I have seen the Charter Oak Swivel Plow accomplish this.

Very truly yours, J. R. FARRINGTON,
Farm Sup't Maine State College.

Send for illustrated circular with full particulars to

THE HIGGANUM M'F'G CO.,
HIGGANUM, CONN.

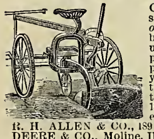
HOLBROOK SWIVEL PLOW.

THE STANDARD OF AMERICA.

This well known plow has been much improved since first introduced. There are many thousands in use. It has no equal. **Price reduced for 1877.** Send for descriptive circular. Manufactured only by

EVERETT & SMALL, Boston, Mass.

THE GILPIN SULKY PLOW.



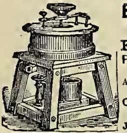
Constructed entirely of iron and steel. Easily operated entirely by *one lever*. Simple, strong, durable. Performs better work in unskilled hands than a skillful plowman can do with walking plow. 7,000 sold and in use in two years, giving unbounded satisfaction. Gold Medal at Illinois State trial 1874, and Indiana State trial 1876, the two highest ever awarded sulky plows.

R. H. ALLEN & CO., 189 Water St., New York, Agent.

DEERE & CO., Moline, Ills. Established 1847. Manufacturers of Steel Plows of all sizes, especially adapted to sticky soils, Gang Plows and Cultivators. Send for circulars.

HAKES PATENT SWIVEL PLOW Improved.

Superior to all others for turning and pulverizing on level land or hill-side, and strong and durable, easy draft. Take a wide furrow. Send for Circulars. Liberal discounts to agents and dealers. Correspondence solicited. Made only by H. B. HAKES, 146 Central Street, Worcester, Mass.



BRADFORD MILL CO.

Successors to Jas. Bradford & Co.
MANUFACTURERS OF
French Buhr Millstones,
Portable Corn & Flour Mills,
Smut Machines, etc.
Also, dealers in Bolting Cloths and General Mill Furnishing.
Office & Factory, 158 W. 2d St.
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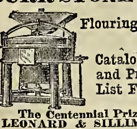
J.R. Stewart, *Pres.* W.R. Dunlap, *Sec.*

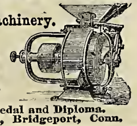
☞ PRICE-LISTS SENT ON APPLICATION

BURR STONE GRIST MILLS

AND
Flouring Machinery.



Catalogue and Price List Free.



The Centennial Prize Medal and Diploma.
LEONARD & SILLIMAN, Bridgeport, Conn.

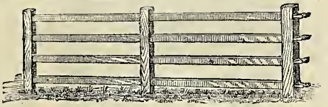
WANTED – Situation as Supt. of Cemetery, by a Scotchman. A Gardener of long practical experience, and for the last seven years associated with Mr. Stranch, in laying out and improving Public Grounds. The best of References. Apply to ADOLPH STRAUCH, Esq., Supt. Spring Grove Cemetery, Cincinnati, Ohio.

GIANT POWDER.

MANUFACTURED BY THE
ATLANTIC GIANT POWDER CO.,
61 Park Place, New York.

Price, per lb..........50 cts. | Caps or Exploders, each 02 cts.
Fuse, per 100 feet......75 cts. | Nippers, per pair........50 cts.

Pamphlets mailed on application to above address.



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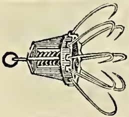
SEABURY'S IMPROVED FENCES for **Farms, Lawns, and Rail-Roads.**—**A Fence** of Wood and Wire combined. No nails in its construction. Requires no skilled labor to put it up. More durable and cheaper than any fence in use of equal strength. It cannot be blown down in any of its parts, and a washing out of post now and then does not impair its utility. Sold complete for putting up from **7 cents per foot** and upwards, according to number of Rails—delivered on route of transportation.

Information given, upon application to

AMERICAN FENCE MFG. CO.,
100 East 14th St., New York City.
Or WM. H. MANN, General Agent,
417 Walnut Street, Room No. 3, Philadelphia, Pa.

Where different styles of this fence may be examined.



SMITH'S

"Eagle Claw of '76."

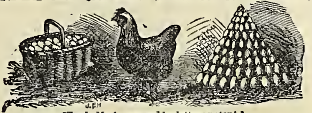
A safe and ingenious device for catching fish, animals, game, &c. Sample, 50 cts., by mail, or send stamp for circular.

Address **EAGLE CLAW CO.,**
713 Sansom St., Phila., Pa.

FRIENDS, if you are in any way interested in **BEES or HONEY,** we will with pleasure send you a sample copy of our **Monthly GLEANINGS IN BEE CULTURE,** with a descriptive price list of our latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all Books and Journals, everything pertaining to Bee Culture. *Nothing patented.* Simply send your address on a postal card, *written plainly*, to

A. I. ROOT, Medina, Ohio.

IMPERIAL EGG FOOD.



[Trade Mark, secured by letters patent.]

Will make Hens Lay!

Used by best poultry men all over the country. Packages sent by mail for 50 *cts.*, $1 *and* $2. *Circulars with testimonials free. References: H. T. Sperry, Pres't Conn. State Poultry Soc'y; H. H. Stoddard, author of "Egg Farm" and editor of "Poultry World;", Geo. P. Burnham, author of "Secrets in Fowl Breeding."*

Liberal commissions paid to reliable men for selling.

CHARLES R. ALLEN, Proprietor,
29 Pearl Street, Hartford, Conn.

FOR SALE.—Game Chickens and Eggs. Entire satisfaction guaranteed. Correspondence fully and carefully answered. Write for prices.

J. W. REYNOLDS, Cuckoo, Va.

DAY'S

AUTOMATIC INCUBATOR.

Highest Centennial Award. Chickens hatched and reared summer and winter. Machine used as Incubator and Artificial Mother at same time. Capacity, 220 eggs. Price, $50. See July *Agriculturist*, 1876. Address

DAY BROS. & CO.,
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GAME FOWL, Red Irish Setters, and Carrier Pigeons, bred and shipped by **J. C. COOPER, Cooper Hill, Limerick, Ireland,** winner of Gold Medals at Paris and New York; also Thoroughbred Hounds, Beagles, and other Dogs. J. C. C. can likewise select **Sheep, Cattle,** and **Horses** for clients, having had long and large experience in them.

High Class Poultry.

Light and Dark Brahmas, Partridge and White Cochins, Brown and White Leghorns, Houdans, and G. S. Bantams. For sale at all seasons, at reasonable prices. Eggs, securely packed in new baskets, $3.00 per 13, or $5.00 for 26. Please state explicitly what you want.

GEO. S. JOSSELYN, Fredonia, N. Y.

Black Bass for stocking ponds—**Pekin Ducks, Bronze Turkeys,** descended from a pair weighing 62 lbs. **Jersey Cattle,** A. J. C. C. R., and Cotswolds, at low prices. Address W. CLIFT, Mystic Bridge, Ct.

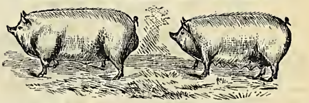
A PERSON WANTED, to join in extensive raising of improved live stock, in connection with orange growing, in an unexcelled location in Florida. To one of means, with a thorough knowledge of breeding live stock of all kinds, desiring a southern residence, a fine opportunity for profitable investment is offered. Or would sell a desirable property with good start in the business indicated.

Address W. C. W., Hibernia, Florida.

FOUST'S HAY LOADER.—A perfect machine for rapidly pitching hay, barley, and all loose grain on the wagon, in the field. Increased success in the harvest of 1876. Received the highest and only award for Hay Loader, with Diploma of Merit at Centennial Exposition, based on field trial. Thousands in successful operation. Manufactured by STRATTON & CULLUM, Meadville, Pa. Send for circulars early. See *American Agriculturist* for November, 1876.

HINGMAN & CO., Peoria, Agents for Central Illinois.

EDEN'S BREED OF SWINE.



Imported by the undersigned from Lancashire, England. These swine have taken first premiums wherever exhibited in England and this country. Advantageous to producers. White in color, well haired, very hardy, small waste, easily fattened, very prolific, large size, mature early. Send for descriptive circular.

W. G. LEWIS, Lawn Farm, Framingham, Mass.

FARMER'S

VETERINARY ADVISER,

By PROF. I. LAW, Cornell University, Ithaca, N. Y.

"The best work on the diseases of animals in the English language."—*Country Gentleman.*

Sent by mail from the Author for **$3.**

BEACON FARM, *Northport, Long Island,*
BREEDERS OF
Alderney and Ayrshire Cattle,
COTSWOLD SHEEP & BERKSHIRE SWINE.

Also FANCY POULTRY of choicest kinds, bred from the best stock. Address

J. N. ROBINS, Manager.

WILLIAM CROZIER,

BEACON HILL, Northport, L. I., N. Y.,

Received a Medal and Diploma on his stock at the Centennial Exhibition, Importer and Breeder of Clydesdale Horses, Ayrshire and Jersey Cattle, South-down Sheep, and Improved Berkshire Hogs—and English Dorking Fowls.

N. GUILBERT,

Evergreen Farm, Gwynedd, Pa.,

Importer and Breeder of Improved Blooded Live Stock, Horses, Cattle, Cotswold and Southdown Sheep, Chester, Berkshire and Yorkshire Pigs, Toulouse, Bremen, Hong Kong, White China and Wild Geese, Cayuga, Rouen, Aylesbury, Pekin and Musk Ducks, Bronze, Blue, Buff and White Turkeys, Dorkings, Brahma, Cochin, Guinea and all other Fowl, Deer, Swans, Peacocks, Pigeons, Eggs, &c., at low prices. Best Breeds of Dogs and Maltese Cats, Rabbits, Ferrets, Guinea Pigs, White Mice, &c. Song Birds of all kinds.

Fine Milch Cows always on hand.

Ferrets at five dollars each. Swan and Deer wanted.

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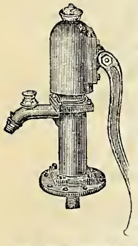

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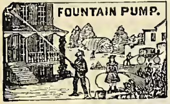
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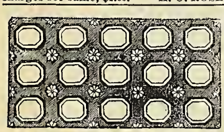

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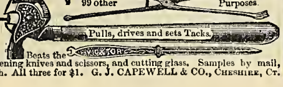

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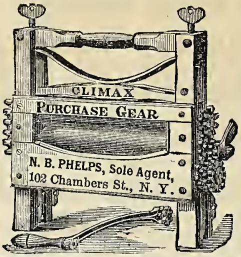

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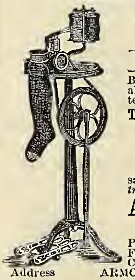

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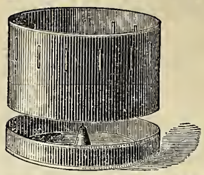

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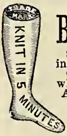

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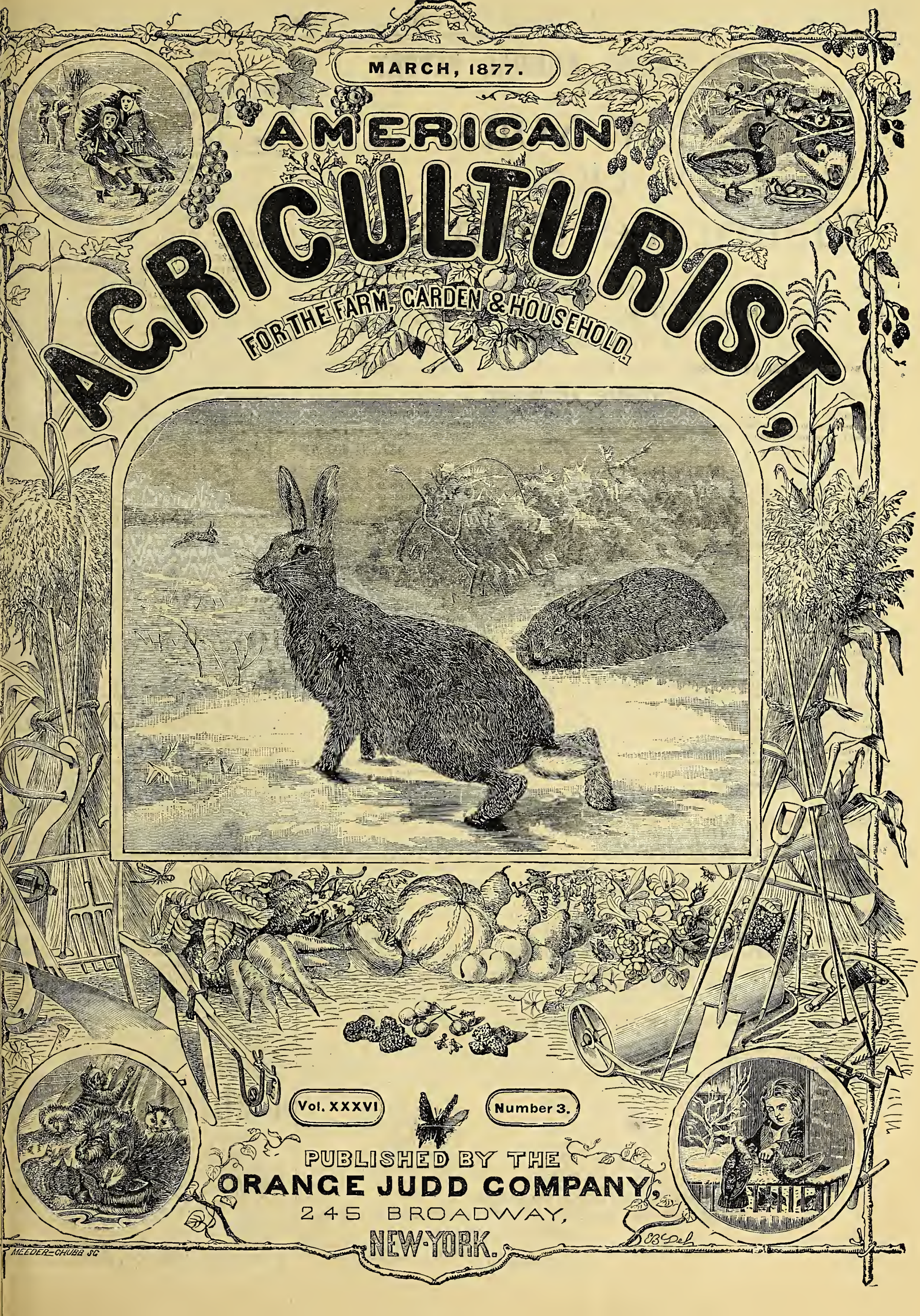

Vol. XXXVI
Number 3.

PUBLISHED BY THE
ORANGE JUDD COMPANY,
245 BROADWAY,
NEW-YORK.

THIRTY-SECOND ANNUAL REPORT
OF THE
NEW YORK LIFE Insurance Company.

OFFICE,
Nos 346 and 348 Broadway.

JANUARY 1, 1877.

Amount of Net Cash Assets, Jan. 1, 1876, - - - - $30,166,902 69

REVENUE ACCOUNT.

Premiums		$5,910,840 87	
Interest received and accrued	$2,164,080 81		
Less amount accrued Jan. 1, 1876	257,130 86	—1,906,949 95	— 7,817,790 82

Total - - - - - - - - - $37,984,693 51

DISBURSEMENT ACCOUNT.

Losses by death	$1,547,648 42	
Dividends and returned premiums on canceled policies	2,516,681 16	
Life annuities, matured endowments, and reinsurances	234,230 22	
Commissions, brokerages, agency expenses, and physicians' fees	373,001 67	
Taxes, office, and law expenses, salaries, advertising, printing, etc.	376,694 33	
Reduction of premiums on United States stocks	140,232 32	
On other stocks	65,307 19	— $5,253,795 31

Total - - - - - - - - - $32,730,898 20

ASSETS.

Cash in Trust Company, in banks, and on hand	$1,427,933 18	
Invested in United States, New York City, and other stocks, (market value, $10,311,045 67)	9,730,529 91	
Real estate	2,541,576 46	
This includes real estate purchased under foreclosure, amounting to $773,402 32, a recent appraisal of which by competent parties shows that, when sold, the company may reasonably expect to realize at least its cost.		
Bonds and mortgages, first lien on real estate, (buildings thereon insured for $15,321,000, and the policies assigned to the company as additional collateral security)	17,354,837 84	
*Loans on existing policies (the reserve held by the company on these policies amounts to $3,659,490)	781,585 39	
*Quarterly and semi-annual premiums on existing policies, due subsequent to Jan. 1, 1877	432,695 40	
*Premiums on existing policies in course of transmission and collection (estimated reserve on these policies $505,000, included in liabilities)	125,027 15	
Agents' balances	36,154 19	
Accrued interest on investments to Jan. 1, 1877	300,558 68	— $32,730,898 20

**A detailed schedule of these items will accompany the usual annual report filed with the Insurance Department of the State of New York.*

Excess of market value of securities over cost	580,515 76

Cash Assets, Jan. 1, 1877 - - - - - - - $33,311,413 96

Appropriated as follows:

Adjusted losses, due subsequent to Jan. 1, 1877	$314,440 98	
Reported losses awaiting proof, etc	201,152 21	
Reserved for reinsurance on existing policies; participating insurance at four per cent Carlisle, net premium; non-participating at five per cent Carlisle net premium	29,634,461 61	
Reserved for contingent liabilities to Tontine Dividend Fund, over and above a four per cent reserve on existing policies of that class	517,504 84	
Reserved for premiums paid in advance	17,038 32	—30,684,597 96

Divisible Surplus at four per cent, - - - - - - - - 2,626,816 00

Surplus, estimated by the New York State Standard at 4 1-2 per cent, over........$5,500,000 00

From the undivided surplus of $2,626,816, the Board of Trustees has declared a Reversionary Dividend, available on settlement of next annual premium to participating policies proportionate to their contributions to surplus. The cash value of the reversion may be used in such settlement if the policy-holders so elect.

DURING THE YEAR, 6,514 POLICIES HAVE BEEN ISSUED, INSURING $20,062,111.

Number of policies in force Jan. 1, 1876, 44,661.
Number of policies in force Jan. 1, 1877, 45,421.

Amount at risk Jan. 1, 1876	$126,132,119 00
Amount at risk Jan. 1, 1877	127,748,473 00

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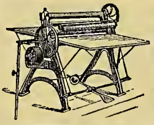

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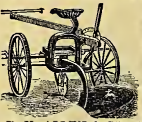

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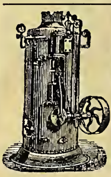

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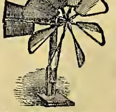

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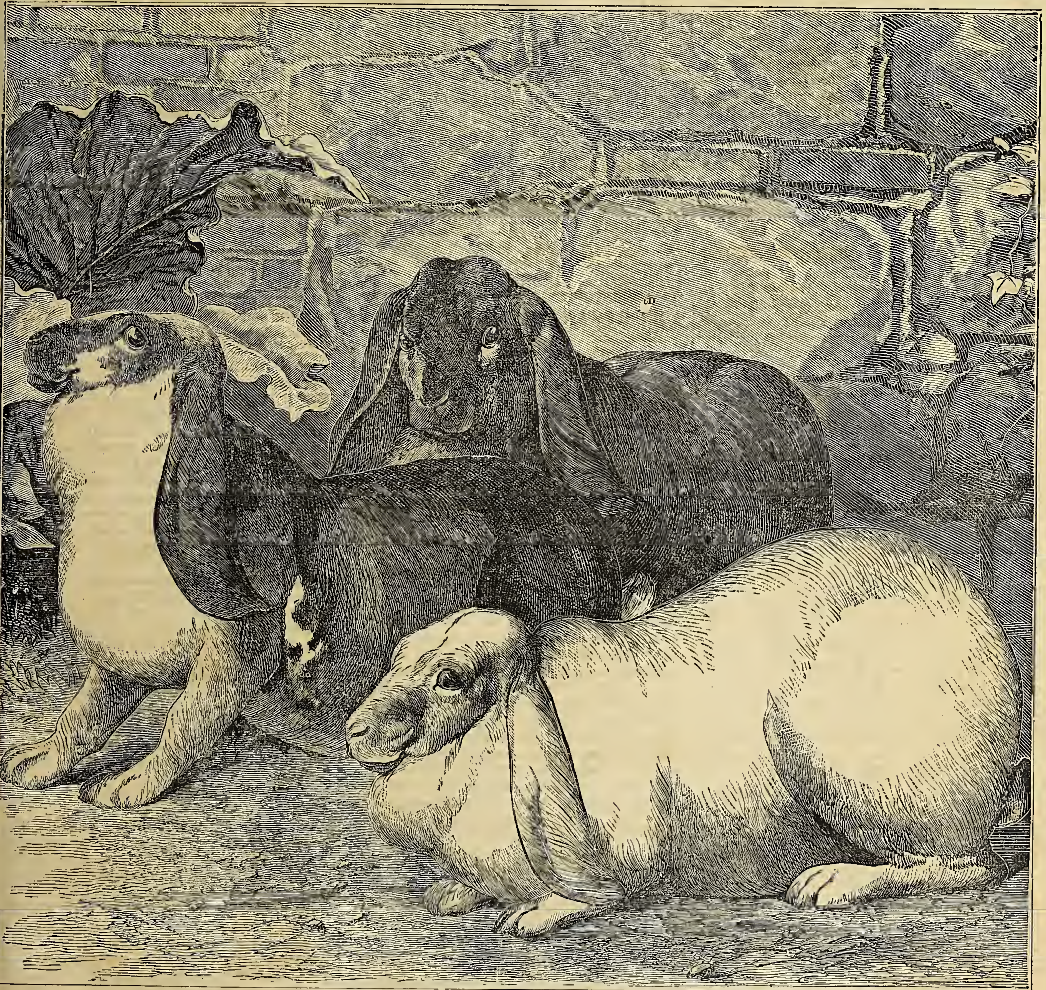

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Keeping Hogs Clean. — "C. W. B.," Henderson Co., N. C. The floor of a hog pen should be of plank. The pen and the hogs can then be kept clean. If the animals are permitted to root up the floor of the pen and burrow in the earth, they will always be in an uncleanly and unwholesome condition, and much food will be wasted. It is quite unnecessary for either the comfort or health of the hogs, to let them exercise their natural propensity to root in the ground. The exercise is really a waste of food, and takes so much from their growth. Hogs will fatten most quickly when they eat, and sleep, and remain perfectly quiet, as they will do in a dry, warm pen, with a clean plank floor, and bedding of clean straw and plenty to eat.

Calendar for March.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	6 34	5 50	8 29	6 33	5 52	8 29	6 32	5 53	8 27
2	F	6 34	5 51	9 44	6 32	5 53	9 42	6 31	5 54	9 34
3	S	6 32	5 52	10 57	6 31	5 54	10 52	6 30	5 55	10 49
4	S	6 30	5 54	morn	6 29	5 55	morn	9 29	5 56	11 57
5	M	6 28	5 55	0 9	6 28	5 56	0 3	6 28	5 57	morn
6	T	6 27	5 56	1 17	6 27	5 57	1 11	6 26	5 58	1 4
7	W	6 25	5 57	2 18	6 26	5 59	2 11	6 24	5 59	2 4
8	T	6 23	5 58	3 10	6 24	6 0	3 4	6 23	6 0	2 56
9	F	6 22	5 59	3 53	6 22	6 1	3 47	6 21	6 1	3 40
10	S	6 20	6 1	4 28	6 20	6 2	4 23	6 19	6 2	4 16
11	S	6 18	6 2	4 56	6 18	6 3	4 52	6 18	6 3	4 47
12	M	6 17	6 3	5 20	6 17	6 4	5 17	6 16	6 4	5 13
13	T	6 15	6 4	5 40	6 15	6 5	5 38	6 15	6 5	5 36
14	W	6 13	6 5	sets	6 13	6 6	sets	6 13	6 6	sets.
15	T	6 11	6 7	6 56	6 12	6 7	6 56	6 12	6 7	6 56
16	F	6 10	6 8	8 2	6 10	6 8	8 1	6 10	6 8	7 59
17	S	6 9	6 9	9 11	6 9	6 9	9 8	6 9	6 9	9 5
18	S	6 7	6 10	10 23	6 7	6 10	10 18	6 7	6 10	10 13
19	M	6 5	6 11	11 34	6 5	6 11	11 24	6 5	6 11	11 22
20	T	6 3	6 12	morn	6 3	6 12	morn	6 3	6 12	morn
21	W	6 1	6 13	0 45	6 2	6 13	0 39	6 2	6 13	0 32
22	T	5 59	6 15	1 50	6 1	6 14	1 43	6 1	6 14	1 36
23	F	5 58	6 16	2 45	6 0	6 15	2 38	6 0	6 15	2 32
24	S	5 56	6 17	3 29	5 58	6 16	3 24	5 58	6 16	3 18
25	S	5 54	6 18	4 5	5 56	6 17	4 1	5 56	6 17	3 56
26	M	5 52	6 19	4 34	5 54	6 18	4 31	5 55	6 18	4 28
27	T	5 50	6 20	4 58	5 53	6 19	4 57	5 54	6 19	4 56
28	W	5 49	6 21	5 21	5 52	6 20	5 22	5 53	6 20	5 22
29	T	5 47	6 22	rises	5 50	6 21	rises	5 51	6 21	rises
30	F	5 45	6 24	8 32	5 48	6 22	8 29	5 49	6 22	8 27
31	S	5 43	6 25	9 47	5 46	6 23	9 42	5 47	6 23	9 38

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	6	5 7 ev.	5 5 ev.	4 53 ev.	4 41 ev.	4 11 ev.
New M'n	14	10 10 ev.	9 58 ev.	9 46 ev.	9 34 ev.	9 4 ev.
1st Quart	22	8 25 mo.	8 13 mo.	8 1 mo	7 49 mo.	7 19 mo.
Full M'n	29	1 5 mo.	0 53 mo.	0 41 mo	0 29 mo.	11 49 28th

AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1877.

One of the most noticeable occurrences of recent times is the purchase of ten thousand American plows by the Russian Government, for distribution among the farmers of Russia. There is more in this than would seem to be at first sight. It is certainly a great compliment as well as a valuable acknowledgement of merit to American agricultural implement makers, but it implies that the competition of American farmers in the European grain trade has touched what has been considered an invulnerable spot. The wheat growers of Southern Russia supply what is known as the Black Sea trade, and being much nearer to the market than we are, their wheat has had a great advantage over ours. But American wheat has displaced the Russian wheat, to a considerable extent, in the English market and the Russian farmers have now to exert themselves to hold even a portion of that trade. Hence it is determined to try the plows that we are using, with a view to produce wheat more cheaply than hitherto. But there is something else needed. The man that holds the plow is of more account than the plow, and there are no farmers in the world who are more intelligent or more skillful than American farmers. But we cannot afford to rest upon what we have gained. The important fact here noticed shows that our competitors are by no means idle, and intend to improve their methods of work as far as possible. We must meet their improvements by others of our own.

Hints about Work.

Keep a Note Book.—Perhaps there is no business in which there are always so many beginners, as farming, and these, whether new at the business or an old hand at it, should make a practice of noting things as they occur to him, or as they happen; and a note book is handy to have in one's pocket.

New Things are continually coming into notice. Now it is a new fodder plant, some new variety of wheat or corn, a new cross of some domestic animal, or a new tool. It is well to try any promising novelty in a small way, at first, to test its value. If successful, it is afterwards easy to add to the stock.

Drains.—There is no better time than the present to dig drains. The January thaw, which was very general, has filled the low ground with water, and flowing water is the best possible leveling instrument. The narrower the drain is made, so that a man can work easily in it, the cheaper may the work be done. When water is flowing in the drain, lay the tiles from the head downwards. There is no danger then of obstructions entering them.

The Cost of Draining can hardly ever be less than it now is. Labor is very low, and those who have improvements to make, and have the money, or see their way clearly to repay it, if borrowed, could have no better opportunity than the present.

Standing Water.—A very important work is to let off any water that accumulates upon the surface. This requires constant attention, and the use of the hoe or a shovel. Whether there is a crop in the ground or not, it is equally necessary to do this thoroughly, else the soil is soaked and dries very slowly. The amount lost through water remaining upon fields, would each year buy for every farmer who permits it, a good paper and more books than he could well study in a year.

Barn-yards, especially, should be freed from water; the wash from the roofs should be carried off before it has soaked through the manure and dissolved out all the valuable parts of it.

Live Stock.—When the coat is shedding, the use of the card, or a smooth curry-comb, should not be neglected. There is then an irritation of the skin, which is allayed by brushing or carding, besides, the loose hair is removed and does not rub off on to the clothes. A teaspoonful of sulphur daily, to every animal, for a week or two, would be helpful.

Vermin.—As the warm weather comes on, lice and ticks become active, and annoy the animals greatly. A mixture of equal parts of lard and kerosene oil, put on the back and brisket of cows, calves and sheep, will have a good effect.

Spring Wheat.—In the districts where this crop succeeds, that is, north of a line drawn from Boston, to the south shore of Lake Erie, and thence to Central Illinois, it is the first crop sown. Shallow plowing, with thorough harrowing, leaving whatever small clods may remain after the harrowing, upon the surface, is the best preparation. Where some stimulating fertilizer is needed, use 150 lbs. of superphosphate of lime, or 100 lbs. of guano, per acre.

Barley.—Skillful management is required to succeed with this crop. Peculiar soils are required to produce a clear, thin skinned, bright colored sample, such as brings the best price in the market. A friable, clean, mellow, dry, limestone clay-loam is perhaps the best soil, but some lighter soils, that are warm and rich, will produce good barley. The soil must be thoroughly worked, and free from weeds. Barley should always be drilled, and the seed placed at an even depth below the surface. There is no better crop with which to sow to clover.

Oats will succeed upon soils where barley would fail. A rough sod and a moist soil will grow good oats; it is the best spring crop for a reclaimed swamp or a newly broken clayey meadow. Two-and-a-half bushels of seed, per acre, is light seeding; 3 bushels, if drilled, or 3½, if broadcast, is sometimes sown with good results. The thick seeding yields a finer stalk, which makes a more desirable fodder than stouter straw.

Oats and Peas, sown together, produce a very nutritious fodder. The two crops together, upon one acre of good soil, will yield nearly, if not quite, as much fodder as would an acre of each sown separately. We have sown two bushels of oats and six pecks of peas to the acre. If sown early, the fodder may be cut for soiling cows or horses in May or June, and a succession for continuous use may be sown every two weeks until early in May. Roll the ground after sowing, so that the crop may be cut with a mower, which may easily be done, as the oats support the peas and prevent lodging.

Other Fodder Crops are barley and tares, or vetches, spring rye, and in the Southern States the Cow-pea may be added to these. A few acres of some early fodder crops will be found very useful for feeding green, or for cutting and curing for hay.

Potatoes.—Earlier planting than usual, will be advisable. Few plant early enough, and now that the Colorado beetle is around very early, it will be well to get the start of him. We have planted as soon as the frost was out of the ground and the soil dry, without heeding occasional night frosts. When the potatoes appear above ground, an inch of earth thrown over them with the hoe, or a light furrow, will be sufficient protection, and if the tops are nipped, the plants will sprout again.

The Colorado Beetle.—Where this pest has been around for years past, it is not feared. No one thinks of being much troubled about it. Yet we hear farmers ask, "shall we plant any potatoes this year or not?" Potatoes must be raised, even if the beetle has to be fought, and Paris green is a safe and effective remedy when properly used. Every potato grower should read Prof. C. V. Riley's book on Potato Pests.

Winter Wheat and Rye.—These crops are much improved by harrowing. If the ground is dry, the plants will not be harmed, but the crust will be loosened, earth will be drawn over plants that have been heaved, and the just starting weeds will be killed. The Thomas harrow, having light, slanting teeth, is admirable for this work, but the common harrow may be used instead of it.

Meadows.—Grasslands and pastures will be much improved by harrowing with a heavy harrow. Spread any fine fertilizer, that may be needed, before harrowing. Old pastures may thus be renewed by the help of fresh seed upon the weak spots.

Clover Seed may be sown upon the snow, or when a frost has hardened the surface. One great advantage of sowing upon the snow is, that a very even spread can be made, as the seed can readily be seen, and the foot marks remain as a guide for the next breadth sown. The most inexperienced need make no lapse or misses. A good quantity of seed for each cast, is as much as can be held between the first and second fingers and the thumb. Walking at an easy gait, this will use up about 8 quarts of seed per acre. If the wind is blowing, walk so that it blows across the path; the effect is then equal both going and returning, but it is not so if it blows first on the face and then on the back.

Horses that were hard worked during the winter, should have a little rest before the spring work begins. The loose coat should be well brushed out, and some linseed meal given in the feed, to help the shedding of the hair. If at night the feet are muddy or wet, wash with warm water and some soap, and rub dry with a piece of woolen blanket. It will prevent cracked heels. As the days grow warm look out for galls, and wash the shoulders with cold salt water. Scrape the inside of the collar, and keep it smooth and hard.

Cows.—Pure water, slightly warmed, with a quart of bran stirred into it, is an excellent drink for cows that have recently calved. Garget may be prevented by milking, before calving, a cow that has a very full bag. If the udder is hard, and hot, give two drams of saltpeter daily; and directly after calving a drink of bran gruel, with 8 ounces of Epsom Salts, and sweetened with molasses. If the cow will not drink this, give it through the drenching horn. Prompt remedies are required for parturient troubles at this time; but prevention is safer and easier than any remedy.

Sheep.—Cold rains are very injurious to ewes and lambs. The spinal regions are remarkably sensitive to cold. If "brats," (see page 98), are used in cold, wet weather, there will not be so much danger in giving exercise. Provide some small separate pens for lambing ewes, and separate rams and wethers from the ewes and lambs. A warm bath is the best restorative for a chilled lamb; after the bath, wrap the young creature in a woolen cloth, and put it behind the stove for a few hours. For a large flock, the shepherd should have a place with a stove in it, in which to treat weak lambs. A few pens around the room, where the weak lambs could be nursed with the ewes for a few days, would be very useful.

Pigs.—The high price of pork has greatly stimulated the breeding of a good class of pigs. With the prevalent diseases, which now destroy so many hogs in the West, there will be a premium for good management. It is very clear that cleanliness, and a variety of healthful food, will prevent diseases. Make a good start now, with the young pigs. Provide warm, clean pens for the brood sows, as a beginning, and so arrange that they may have a clean pasture lot to run in; not a bare, muddy piece of waste ground, but a good piece of clover or grass, in which they may procure the bulk of their food. Breed only from thoroughbred boars; keep the best stock, and keep them healthful and growing.

Poultry.—Cleanse the poultry-houses and nest-boxes from lice. We have lined our poultry-house with Johns' Asbestos roofing, at a cost of a few dollars only, and there is no fear of vermin of any kind in it hereafter. The smell of carbolic acid from the tar is very strong, but not disagreeable, and will thoroughly disinfect the house. Provide a warm corner in the stable for the earliest brooding hens, and give extra care to the young chicks. March and April chicks will give a plenty of eggs next winter.

Notes on Orchard and Garden Work.

So far as relates to the Orchard and Fruit Garden, our Notes in January were so full that but little remains to be said on preliminary work in these departments, and the Kitchen and Market Garden were treated with equal fullness last month. There will be few localities, except in the Southern States, in which the Notes for January and February, will not be applicable now. These Notes are very full, upon the preliminary work of selecting and ordering varieties of trees, plants and seeds, a work too often put off until the last moment, to the inconvenience of the dealer, and sometimes to the disappointment of the purchaser. Trees, plants of all kinds, seeds, fertilizers, implements, and for those engaged in marketing, packages should be thought over and purchased or made, well in advance.

Where to Purchase.—It is not our custom to recommend one dealer in preference to another. Our advertising columns are closed to all suspicious parties. Do not, because you do not see the particular thing you want advertised, write to us to ask where you can get it—unless some unusual article. Recollect that each nurseryman has all the well tested fruits; each seedsman all the standard varieties of seeds, and so on. Write to one or more for catalogues—which they will gladly send, and make purchases where it seems most desirable. Do not infer that we are not willing to answer questions, but so many come, involving a letter in reply, and often a waste of time when that is precious, that the catalogue of any respectable dealer would answer, that we give this suggestion.

Two things to be avoided.—Do not let the season always be hurrying you, as will always be the case with those who start a little late. The other extreme is about as bad: do not try to push the season. Working the soil before it is in a proper condition, and putting in seeds before the soil is warm enough to germinate them, are among the costly mistakes often made by the inexperienced.

Orchard and Nursery.

Consult the January Notes. Setting new orchards and caring for those already set, whether new or old, will be in order in many localities.

Injuries to trees should be repaired as soon as discovered. Limbs broken by snow and ice must be sawed off to make a smooth wound, and this covered with paint, varnish or wax. Barking by mice or rabbits often looks more serious than it really is. The majority of cases will recover if the wound is protected by a thick poultice of cow-dung and clayey loam, bound on with a piece of coarse material. In very severe cases the tree may be saved by connecting the bark, above and below the wound, by means of twigs of the same tree; the ends are chamfered, and inserted under the bark above and below, to bridge over the wound; covering the exposed parts with grafting wax.

Protecting cut Surfaces is well done by the cow-dung and loam plaster above mentioned, but it is not so neat or so easily applied as some other. Something for this use should be always in readiness. Either thick white-lead paint, tinted by a little umber or other color; grafting wax, melted, but not too hot, or shellac varnish, may be used.

Grafting Wax used in grafting is made of Wax 3 parts, Rosin 3 parts, Tallow 2 parts. These are to be melted together in an iron vessel, kept for the purpose, at as low a temperature as will serve. It may be applied with a brush to wounds. When used in grafting it is more convenient on cloth; old cotton, calico or other fabric, that will tear readily, is torn into strips, made into rolls, soaked in the hot wax until thoroughly penetrated, drained of the excess of wax, and when cool is ready to use.

Varnish.—Place shellac in a wide-mouthed jar, use strong alcohol enough to cover it and set in a warm place until dissolved; or set the bottle in a saucepan of cold water, with some sticks to keep it from the bottom, and set on the stove to gradually heat; it will dissolve in a short time. Be cautious of fire. If too thick, add alcohol. Keep the brush in the varnish, with the handle through the cork.

In planting, trim broken roots, cut the top back from one-third to one-half. Spread the roots equally, working fine, rich top-soil well in among them. A tree properly set needs no stakes.

Manure is hauled to the orchards much more readily when snow is on the ground than later. On old orchards manure the whole surface. Close around the trees is where the manure is least needed.

Root-grafts.—Set in nursery rows, when the soil is ready. See that the earth is pressed down firmly and in close contact with the whole root.

Other Nursery Matters.—Cut back stocks budded last year, within 3 or 4 inches of the bud, if that has taken....Those in which the bud is dead may be grafted, except peaches and cherries....Cut back young nursery trees to form a properly shaped head before vegetation starts.

Various Orchard Matters.—Cut cions before the buds swell....Do not graft until the buds begin to swell....Necessary pruning should be done before vegetation starts ...Washing the trunks of trees is best done in a damp spell; scrape if need be.... Soft soap, thinned with water to work well with a brush, we prefer to lye or solution of soda or potash. Apply thoroughly to the trunk and larger branches, and leave the rains to do the rest.

The Fruit Garden.

See January Notes. After suitable varieties are selected and planted, success here will depend largely upon three things—manure, mulch and water.

Manure.—Well decomposed stable manure, or any good compost may be forked in at the spring dressing. Bones are better for grape vines, in which stable manure causes too rampant growth. Ashes are good on most plants, especially where a growth of wood is desired.

Mulch.—A few inches of straw, marsh or bog hay, or leaves on the soil will often save a crop, and is always useful. It keeps the soil moist, and especially important if you can not apply

Water without great expense. Few fruit growers but have felt that a sufficient watering at the right time would have saved the crop of strawberries. In time no one will attempt to grow them without irrigation. In many cases water can be carried from the cistern or well by a system of V troughs, and the results warrant the outlay.

Blackberries and Raspberries start very early and should be set early. When hard frosts are over take up and tie up to stakes or trellises the tender kinds of Raspberries that were laid down last fall.

Currants and Gooseberries need early attention. If cuttings were not put in last fall do it now.

Grape Vines, if not already pruned must have immediate attention. How to prune depends so much upon the present condition of each vine that but few general rules can be given. The fruit of the year will be borne upon new shoots which will come from the buds now to be seen on the old canes. There is more danger of leaving too many than too few. In setting new vines prefer those one, or not over two years old. There are few yards so small that have not room for one vine, and few large farms on which are raised all the grapes the family should have.

Strawberries.—Open the mulch over the plants, when cold weather is over, but leave it on the bed until the fruit is off. Set new plants early.

Sundry Matters.—If fruit is marketed, have baskets, crates and all packages in readiness and marked....Do up any neglected pruning....See that all stakes and trellises are in proper condition to last through the season....Look to the labels.

Kitchen and Market Garden.

Hot-beds and frames will occupy the greater portion of our readers this month. The Notes for last month are very full on these, and we need not repeat. Those who would be glad to have a few early cabbage, tomato, or other plants, and do not care to undertake a hot-bed, are referred to what is said there about window boxes. The gain is so great and the trouble so small, that those who once make the trial, will not give them up. A list of the standard varieties of the various vegetables was given last month. Send for catalogues, and order at once all the seeds likely to be wanted for the year.

Novelties.—While we often caution against trusting to untested novelties for a main crop, there is nothing more interesting than to test and compare these. One sometimes draws a real prize, but the must be prepared for some disappointments.

Sow in Hot-bed, the time to be governed by the locality, but generally 6 weeks before it is safe to put out the plants.—Cabbage, Cauliflower, Cucumber, Egg Plant, Lettuce, Melon, Peppers, Tomatoes. If early Celery and Parsley are desired these may also be sown. Egg Plants and Peppers can not be put out until quite warm weather, and in northern localities do better if not sown before next month. Melons and Cucumbers may be sown in small pots and thinned to two or three, or in the earth of small squares of firm thick sod, placed grass side down.

In the Open Ground, seeds of the hardiest plants may be sown whenever the soil is in good condition for working; such as: Beets, Carrots, Cress, Leeks, Onions, Peas, Radish, Spinach, Turnips.

Asparagus.—When the weather is settled rake off the litter and fork in the fine manure lightly. In inland places, sow on refuse or other salt, 2 lbs. to the square yard. Set new beds with one-year roots. In field culture 3x3 and even 4x6 feet are allowed between the plants. For the family garden 2x2 ft. or 18x18 inches is usual. Give each plant a shovelful of good manure, cover this with 2 inches of earth, set the plant with its crown at least 6 inches below the surface, and cover it; when the shoots appear, fill up the furrow gradually.

Peas.—To have them early, plant early; to have them long in bearing, plant deep, never less than 4 inches. Soil well manured last year is best.

Potatoes.—Only early varieties belong in the garden, but both early and late should be planted early to get ahead of the "bug" as much as possible. Generally it will be Paris green or no potatoes.

Cabbages or Cauliflowers.—Plants wintered in cold frames, if properly hardened, may be set when the ground is ready; set deep, frost will not hurt them.

Manure.—We are often asked what is the best substitute for stable manure, in the garden. Probably, take it all in all, Peruvian guano is as cheap as any. There are other good fertilizers, and their price is generally in proportion to their value, as compared with guano. Guano should be sifted; have its lumps broken fine and sifted, and mixed with twice or thrice its bulk of leaf-mold, dried muck, or even garden soil. Street sweepings are useful for this purpose. Mix thoroughly, shoveling over several times, and put in barrels or boxes for use. This allows even distribution—and prevents injury by applying too much in a place.

Other Matters.—Get ready a supply of Pea Brush, Bean Poles and all other stakes likely to be needed ....Have tools and implements all at hand and in order....Paris green, and how to use it, are to be thought of....Buy all needed fertilizers....If help is to be employed engage it early and for the season.

Flower Garden and Lawn.

Planting.—Make preparations for planting early. Mark the position each tree and shrub is to occupy upon a plan, so that no time will be lost in consultation when the ground is dry enough to work.

Lawns.—Clean up all leaves and rubbish from the lawn during the winter, so that they will not interfere with the use of the lawn mower.

Shrubs may be pruned, but only by one who knows the habits of the plants, else in case of those which flower from ready-formed buds, all hopes of bloom may be destroyed; except in hedges, dont try to make the shrubs all alike.

Walks and Roads.—Lay out and make all new ones needed, and only such as are needed, as soon as the season will allow. Gravel, broken stones on a foundation of "cobble" and other stones, are the best materials for good, dry, durable walks and drives; their first cost is more, but they will last, and will require only slight repairs; the soil should be removed to a depth of two to three feet at least, to get a permanent foundation that frost will not affect.

Perennials which have been set several years should be divided, or they will decrease in the size and number of their flowers. Do this as early as possible, as most of them begin to grow early.

Annuals.—Sow seeds in hot-beds or window boxes; by the time the weather is warm enough to set them out, they will be ready to flower.

Bulbs.—Take off the covering from the fall planted bulbs. Look after the tender bulbs of Gladiolus, Dahlia roots, etc., and see that they are placed where they will not rot from too much moisture.

Greenhouse and Window Plants.

Care is required in giving air and water; too much or to little water is to be avoided, but more plants are injured by too much than by too little.

Propagation should go on rapidly, whether to prepare a stock of plants for sale, or for bedding out in the home grounds. The temperature of the propagating bench should be several degrees higher than that of the air above, to induce the formation of roots as rapidly as possible.

Fumigation.—To keep plants free from various insects, fumigate them with tobacco smoke, once or twice a week. Use tobacco stems which are the cheapest form in which tobacco can be had. The operation is best performed at night when the houses can be closed. In the morning, thoroughly syringe, or shower with the hose.

Forcing.—If any pots of bulbs, or other plants to be forced are still in the cold frame, or cellar, bring them into heat, and they will soon flower.

Commercial Matters—Market Prices.

Gold has been up to 107, and down to 104¾, closing Feb. 12, at 105⅝, as against 106 on Jan. 12; 107¼ on on Dec. 12; and 112⅞ on the 12th of Feb., 1876... Business in Breadstuffs has been generally on a comparatively moderate scale, during the past month. The foreign advices have been unfavorable to free export movements. Speculation at Chicago and in our market has seriously impeded legitimate operations. Home trade requirements have not been remarkably urgent. Prices have fluctuated considerably. Flour and Wheat leave off firmly, on moderate offerings. Corn, Rye, and Barley depressed and declining. Prime to choice Oats steady, but poorer qualities lower and irregular. Buckwheat and Buckwheat Flour have been in moderate request at variable rates....Provisions have shown less activity, closing in favor of buyers, especially in the instances of Pork, Lard, and Butter. Eggs have declined materially, on a slow trade and pretty free offerings. Cheese has been quoted stronger, on a better demand, mainly for shipment....Cotton has been active, but quite unaltered in price. ..Wool has been moderately dealt in; prime to very choice lots firm; less desirable grades heavy and cheaper....Tobacco has been in fair demand within the previous range....Seeds and Hops have been less active and quoted lower....Haw and Straw about steady, with a fair inquiry noted....Ocean Grain and General Cargo Freight interests have been unusually quiet and depressed, with rates quoted decidedly lower, though closing rather more firmly....Grain rates by steam to Liverpool closed on the 12th of Feb. at 5½@6*d*; to Glasgow at 5*d*; to London at 5@5½*d*; to Liverpool, by sail, at 5@5½*d*; London, by sail, nominal, per bushel. Provisions by steam to Liverpool, 30*s*.@35*s*. per ton; Cotton at ¼*d*. ₩ lb. Grain, by sail, for Cork and orders, at 5*s*.3*d*.@5*s*.6*d*. per quarter.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Feb. 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	271,000	491,000	311,000	87,000	305,000	719,000
25 d's *last* m'th	207,000	791,000	904,000	92,000	227,000	547,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	221,000	679,000	1,203,000	47,000	131,000	529,000
25 d's *last* m'th	294,000	2,338,000	1,469,000	50,500	239,000	601,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877..	271,000	491,000	311,000	87,000	305,000	719,000
28 days 1876..	211,000	1,007,000	1,309,000	13,500	425,000	411,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877..	221,000	679,000	1,203,000	57,000	131,000	529,000
28 days 1876..	287,000	1,694,000	2,226,000	28,000	296,000	714,0.0

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218 841	873,310	1,182,322	512,041
Nov. 8, 1876..	2,048,233	3,206.003	294,381	478,141	1,002,891	495,640
Oct. 9, 1876..	1,931,892	1,195 387	158,305	91,245	825,187	421,751
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Exports from New York. Jan. 1, to Feb. 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1877....	153,588	1,276,859	1.793.888	53,533	71,283	15,309	66,191
1876....	241,698	1,843,457	1,731,215	15,387	——	35,537	168,137

CURRENT WHOLESALE PRICES.

	Jan. 12.	Feb. 12.
PRICE OF GOLD.	106	105 5-8
FLOUR—Super to Extra State	$5 25 @ 6 25	$5 40 @ 6 35
Super to Extra Southern....	5 25 @ 8 75	5 50 @ 9 25
Extra Western	5 75 @10 50	5 75 @11 00
Extra Genesee	6 25 @ 7 15	6 30 @ 7 50
Superfine Western	5 25 @ 5 75	5 40 @ 5 90
RYE FLOUR	3 00 @ 5 20	3 00 @ 5 10
CORN-MEAL	2 65 @ 3 60	2 85 @ 3 55
BUCKWHEAT FLOUR, ₩ 100 lbs	3 65 @ 4 00	3 50 @ 4 10
WHEAT—All kinds of White.	1 35 @ 1 57½	1 45 @ 1 65
All kinds of Red and Amber.	1 05 @ 1 55	1 10 @ 1 65
CORN—Yellow	57 @ 63	56½@ 61
Mixed	57½@ 64	55½@ 62
White	58 @ 63	56½@ 62½
OATS—Western	40½@ 50	39 @ 50
State	47 @ 53	47 @ 55
RYE	83 @ 95	80 @ 93
BARLEY	65 @ 1 12½	65 @ 1 12
BUCKWHEAT	92½@ 95	95 @ 1 00
BARLEY MALT	70 @ 1 30	67½@ 1 30
HAY—Bale, ₩ 100 lbs	55 @ 1 00	65 @ 1 05
STRAW, ₩ 100 lbs	55 @ 95	55 @ 95
COTTON—Middlings, ₩ lb	13 @ 13¼	12¾@ 12⅞
HOPS—Crop of 1876, ₩ lb	12 @ 30	8 @ 25
" old, ₩ lb	10 @ 17	6 @ 15
FEATHERS—Live Geese, ₩ lb	45 @ 58	45 @ 57½
SEED—Clover, ₩ lb	15 @ 16¾	15 @ 16¾
Timothy, ₩ bushel	— @ 1 90	1 90 @ 2 10
Flax, ₩ bushel	1 60 @ 1 70	— @ 1 70
SUGAR—Refi'g & Grocery ₩ lb	8 @ 11	8½@ 10½
MOLASSES, Cuba, ₩ gal.50 test	Nominal.	26 @ 37½
New Orleans, new crop, ₩ gal	40 @ 60	40 @ 59
COFFEE—Rio (Gold)	19 @ 22¼	17½@ 21
TOBACCO, Kentucky, &c., ₩ lb.	5 @ 18	5 @ 18
Seed Leaf, ₩ lb	4½@ 50	4¼@ 50
WOOL—Domestic Fleece, ₩ lb	28 @ 50	30 @ 53
Domestic, pulled, ₩ lb	22 @ 40	20 @ 45
California, spring clip,	15 @ 30	15 @ 30
California fall clip	12 @ 23	13 @ 23
TALLOW, ₩ lb	8 @ 8½	8 @ 8¼
OIL-CAKE—₩ ton	36 50 @ —	35 00 @36 50
PORK—Mess, ₩ barrel	17 25 @18 25	16 65 @16 80
Prime, ₩ barrel	14 00 @14 25	13 25 @13 50
BEEF—Plain mess	10 50 @11 50	10 50 @12 00
LARD, in tres. & bbls, ₩ 100 lb	10 75 @11 50	10 50 @11 25
BUTTER—State, ₩ lb	22 @ 37	20 @ 35
Western, poor to fancy, ₩ lb.	16 @ 37	14 @ 34
CHEESE	6 @ 15	6 @ 15½
BEANS—₩ bushel	1 85 @ 3 75	1 50 @ 3 25
PEAS—Canada, in bond, ₩ bu	— @ 90	— @ 92
EGGS—Fresh, ₩ dozen	32 @ 40	22 @ 26
POULTRY—Fowls	9 @ 16	9 @ 12
Turkeys—₩ lb	9 @ 16	8 @ 12
Geese, ₩ pair	1 25 @ 2 00	1 25 @ 2 00
Geese, ₩ lb	7 @ 13	7 @ 11
Ducks, ₩ pair	55 @ 1 00	50 @ 1 00
Roosters, ₩ lb	7 @ 8	6 @ 8
Chickens, dry pick'd lb	13 @ 17	10 @ 14
GROUSE, ₩ pair	65 @ 80	60 @ 80
PARTRIDGE, ₩ doz	55 @ 62½	40 @ 45
DUCKS, Wild, ₩ pair	40 @ 2 00	20 @ 2 00
QUAIL, ₩ dozen	75 @ 1 37½	65 @ 1 00
VENISON, ₩ lb	8 @ 14	— @ —
RABBITS, ₩ pair	18 @ 25	18 @ 20
HARES, ₩ pair	25 @ 40	20 @ 30
TURNIPS ₩ bbl	75 @ 1 00	75 @ —
CABBAGES—₩ 100	4 00 @ 9 00	5 00 @ 9 00
ONIONS—₩ bbl	1 50 @ 4 50	3 00 @ 5 00
POTATOES—₩ bbl	2 25 @ 3 75	3 25 @ 4 00
" new, Bermuda	— @ —	6 25 @ 8 00
SWEET POTATOES—₩ bbl	4 25 @ 5 00	2 50 @ 4 75
CAULIFLOWER, ₩ bbl	— @ —	— @ —
TOMATOES, new Bermuda, bx	— @ —	2 50 @ 3 00
BROOM-CORN	3½@ 8	3½@ 8
GREEN PEAS, ₩ bush	1 25 @ 1 40	1 35 @ 1 40
CRANBERRIES—₩ bbl	7 00 @ 9 00	8 00 @10 50
" ₩ crate	2 75 @ 3 00	2 50 @ 3 00
APPLES—₩ barrel	1 00 @ 2 00	1 25 @ 2 25
SQUASH, ₩ bbl	— @ —	1 25 @ 1 75
GRAPES, ₩ lb	— @ —	4 @ 8
CIDER, ₩ gal	7 @ 10	— @ —

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Jan. 15	7,796	78	757	15,666	21,442
Jan. 22	9,720	155	740	16,51	719,612
Jan. 29	11,141	89	736	33,264	19,482
Feb. 5	9,155	144	599	20,606	21,014
Feb. 12	8,872	66	805	21,465	20,184
Total for 5 *Weeks*	46,684	532	3,637	110,518	101,734
do. *for prev.* 4 *Weeks*	31,284	339	2,917	76,549	106,388
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,337	106	727	22,103	20,347
do. do. *last Month*	7,821	85	729	19,137	26,597
do. do. *prev's Month*	10,034	107	1,605	27,326	35,583

Beeves.—The advance in freights, and the snow blockade, with its delays and losses, helped the market up ⅛ a cent. The arrival of the delayed trains with the weight of a lot of poor stock, forced to sale, dragged prices down again, and the advantage was more than lost. A principal feature of the monthly business was the shipment of more than 6,000 head to Europe. It is very clear that the extension of this business tends to take away all our best stock, skinning our markets of what we need. It is equally clear that the margins for profit depend upon low prices here, and high prices in England, and also that the trade can not change these conditions and still exist. To take over 1,000 head of the best cattle weekly from our supplies, is a serious loss. The effect is seen in the return of the rates for extra stock to 13 cents. On the whole the market has been dull, closing with a little life, and a slight advance. The unusually large stock of prime cattle selling at 11c., and extra at 11½ to 12c. for 59 ℔s. ₱ cwt. estimated, helped the average. Good natives brought 9¾@10½c., for 56@57 ℔s., and Texans estimated at 55 ℔s. ₱ cwt., were dull at 8¾@9c. ₱ ℔.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Jan. 15...........	8⅝@12 c.	9⅝@11½c.	10⅜c.
Jan. 22...........	8½@12¼c.	9 @11½c.	10¼c.
Jan. 29...........	7½@13 c.	9½@10½c.	10 c.
Feb. 5...........	7¼@12 c.	9 @10½c.	9⅝c.
Feb. 12..........	8½@12½c.	9¼@11 c.	10 c.

Cows.—On various favorable accounts the market has improved slowly but steadily, and there is a fair inquiry for good milkers, at $60 to $65 ₱ head, and $70 is readily paid for choice. Common cows are quoted at $40 to $45....**Calves.**—Good veals have been in fair demand, with firmer prices. Prime sold at 9@9½c. ₱ ℔., extra at 10c., and fair to good at 8@9c. ₱ ℔. live weight. Prime hog dressed are quoted at 12@13c. ₱ ℔....**Sheep.**—The trade in sheep has dragged miserably since the receipt of 33,000 and over in one week,. Stock has been sold for less than cost in Chicago, and many lots have been carried over from week to week unsold. Very fat sheep closed at 7½@7¾c. ₱ ℔., live weight; fair at 6c, and poor at 4¾@5¼c. ₱ ℔.....**Swine.**—The warm weather has taken the stiffness out of the hog market, and prices have weakened considerably. Western dressed have come in in bad order, bringing only 7½c. ₱ ℔. City dressed sold for 8@8¼c., and live brought 6½@6¾c. ₱ ℔.

Prices of Feed.

Bran, per ton..	$18.00@$20.00
Middlings, per ton..................................	19.00@ 21.00
Ground Feed, per ton.............................	15.00@ 21.00
Linseed-oil-cake, western, per ton...........	41.00@ 47.00
Cotton-seed-cake, per ton.........................	25.50@ 40.00
Chandler's Scraps, per ℔.........................	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton..	$56.50
do. do. guaranteed, ₱ ton, cargo A	56.00
do do. rectified, per ton, 10 p. c..	68.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
" Potato do do do do	25.97
" Turnip do do do do	19.36
" Fine Bone, strictly pure........ ...per ton	40.00
" Dissolved Bone, 15 per cent........ do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.00
" " Dry ground Fish Guano, ton	45.00
" " Pine Island Guano, per ton.	45.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton........	45.00
Fish Guano (crude in barrels), per ton..........	18.00
Bone Flour, per ton....	45.00
Rawbones Ground (pure), per ton................	33.00@ 40.00
German Potash Salts, (25@35 per cent), per ton.	22.00@ 25.00
Gypsum, Nova Scotia, ground, per ton..........	8.00
Nitrate of Potash (95 per cent.), per lb.	8⅝c.@ 9½c.
Sulphate of Potash (80 per cent) per lb..........	3½c.@ 4 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2⅝c.@ 3¼c.
Nitrate of Soda, per lb..............	4¼c.@ 4⅝c.
Sulphate of Ammonia (25 per cent.), per lb....	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia.	$3.00@ $ 4.00

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Fish Culture Profitable.—In the Report, Jan. 1, 1877, of the Connecticut Fish Commissioners, (Messrs. Hudson, Pike, and Bill), we read: "There are few enterprises enjoying public attention at the present time that promise more profitable results than the multiplying of food fishes in fresh water ponds....It is the belief of all who have studied the subject, that fresh water fishes of all kinds can be multiplied almost indefinitely, and so cultivated as to be improved not only in quantity but in quality, and made to be the *cheapest of cheap food.* This fact should be repeated over and over again, until every one who has a patch of water on his premises large enough for tadpoles and shiners, can make it yield an abundance of wholesome fish food, at not half the trouble and expense with which he cultivates a like patch of ground. The food thus produced is too much neglected by the farming community; it affords elements of nourishment necessary to a healthy condition of the body, for which no cheaper available substitute can be found."—The Report describes 256 ponds of 5 to 2,000 acres each, aggregates 31,604 acres in Conn. alone.—"These contain a considerable number and variety of food-fishes—although probably not a thousandth part of what this may be made to produce at a little expense of time and money. Besides these (256) large ponds, there are a greater number of ponds of less than 5 acres each, that are in like manner capable of development."—We would like to see a similar report of the capabilities of other States. The subject is one of great interest and importance to every State. Those not abounding in lakes and ponds, have rivers which may be easily stocked with food-fishes, doubtless at a great profit.

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MARCH

Is a first-rate month in which to secure some of the

Good Things Offered

In our Illustrated Premium List. If you have not received this, send to the Publishers and get one, free.

Spring Work

Is coming on, and multitudes will want the aid of this Journal. Gather a few names of Such, and receive some valuable article free. Hundreds of people always do this in March, and you may as well be one of them.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

☞ **N.B.—The Postage Law.**—The present postal law **requires pre-payment of postage by the publishers.** Each subscriber must therefore remit, in addition to the old rates, **ten cents for prepayment of yearly postage by the Publishers, at New York.** Every subscriber, whether coming singly, or in clubs at club rates, will be particular to send to this office postage as above, *with his subscription.* Subscribers in British America will continue to send postage as heretofore, for pre-payment here.

Remitting Money: — Checks on New York City Banks or Bankers are best for large sums; make payable to the order of **Orange Judd Company. Post-Office Money Orders** for $50 or less, are cheap and safe also. When these are not obtainable, **register** letters, affixing stamps for postage and registry; put in the money and seal the letter in the presence of the postmaster, and *take his receipt for it.* Money sent in the above three methods is safe against loss.

Bound Copies of Volume Thirty-five are now ready. Price, $2, at our office; or $2.50 each, if sent by mail. Any of the last twenty volumes (16 to 35) will also be forwarded at same price. Sets of numbers sent to our office will be neatly bound in our regular style, at 75 cents per vol. (50 cents extra, if returned by mail.) Missing numbers supplied at 12 cents each.

CLUBS—Increasing: Advantages: Lower terms are given to clubs of four or more subscribers, partly because it costs less to mail in packages, with only name slips on each paper; and partly to encourage getting up large lists. We do not object to a person's adding names to his club from other post-offices, because such additions usually become centers of other clubs....A Club can at any time be increased by the addition of other names, if these start with the same date as the others....Any one having sent a small club at one price, may raise the club to a large figure, and lower rate for all. Thus: one having sent 4 names at $5.20, may send 6 names more for $6.80, making $12 for the whole 10, including postage. And so for other club rates. . The Terms are: Single subscriptions $1.60 each; two names $1.50 each; three names $1.40 each; ten to nineteen names $1.20 each; twenty names and upwards $1.10 each. Postage always pre-paid by the Publishers..... Premium clubs may be gathered at any number of post-offices, if all are sent in by the same person.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German edition of the *American Agriculturist.* It contains not only the Engravings, and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other one contains so much useful information, or a tithe of its engravings. The Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners, and all would find it pay to do so.—Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc., because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond a couple of German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ Please call the attention of your German neighbors to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

Amuse Your BOYS, and Yourself.—One of the best ways of keeping your boys, (and yourself), out of evil associations, is to provide pleasant entertainment *at Home.* C. M. Crandall has just brought out one of the best things for this, that we have ever seen, or thoroughly tried. We have seen a whole family, including Father, Mother, Daughters, and Boys, participating in and thoroughly enjoying this new amusement. In one sense it is a "moral reformer"—for Boys. With this at home, they will not be found playing marbles and spoiling their clothes in the street. A cannon that will shoot without powder, and at the same time be a good home substitute for games that grown men indulge in at public resorts, is certainly an acquisition. As one will last half a dozen years or so, the cost may be put down at 50 cents a year, or 1 cent a week—cheap indeed for so attractive a home amusement. For particulars, see page 116.

A Valuable New Potato — Some Seed Free.—The introduction of the "Early Rose" Potato was worth millions to the country, and most of those who paid $3 to $5 a pound for the first seed, found great profit in it.—This year a *new* and very promising variety is offered, the **"Superior."** Though there is but a very limited supply, the price is put at $1 a pound. Those who get even half a pound will with care have a good start, as a single pound produced 675 lbs. during the past season. We have secured a small quantity for the benefit of our readers, and would gladly present each of them with a little, but as this is impossible, we make the following proposal: Any present subscriber who will, after March 1st, send one new subscriber to the *American Agriculturist* for 1877, at $1.60, will be presented with two of the "Superior" Potatoes, weighing ¼ lb. each, post-paid. Any present subscriber sending *two* new subscribers, as above, at $1.60 each, will be presented with *three* half-pound parcels, (or 1½ lb.) With care in dividing the eyes, and cultivation, 1½ lb. may be multiplied to 1,000 lbs., or *fifteen* bushels, or even more, the first season, which will furnish a good start for next year, as but few who will have them any way. (One man produced 1,707¾ lbs. from 1 lb. of the "Alpha" last season, and another 1,982 lbs. from 1 lb. of the "Ruby.") The above offer is well worthy of attention.

Business Reviving in Earnest.—Marked evidences of this are visible everywhere. The country is down to hard pan prices, with the exception of house servants' wages and a few other things, and any change must now be for the better. The country is really growing richer as a whole; the economy practiced reduces the expenses below the earnings. If a man earns 50 cents a day, and spends 45, he is improving his condition by 10 per cent of his earnings.—As to revival of business, among many indications our advertising columns are one. They are more crowded than at any time before, since the panic of 1873.—In March and April the editors usually yield more space to the business columns than at other seasons, but our readers will hardly regret this, for in the advertising pages they will find much of interest. This is the time to look out in advance for Spring Seeds, Plants, Implements, etc., etc., and it will pay every one to go carefully through all these pages, and see what is offered, by whom, and at what prices, and forward early orders, or send for circulars, catalogues, etc. Nowhere was there ever brought together a better class of advertisers as a whole. Our rules are perhaps more stringent than those of any other journal, in shutting out all medical and deceptive advertisements, and all persons whom we do not believe to have *both the ability and intention to do just what they promise.* Our readers can therefore write to them in confidence of receiving fair treatment. In writing to any of these men, or ordering, or sending for catalogues, circulars, or information, it is well to let them know that you belong to the great, wide-awake Agriculturist family. It will please the advertisers and perhaps stimulate them to extra care in pleasing you, for marked failures to do the fair thing would exclude them from these columns afterwards.

P. S.—As we go to press, our printers inform us that many of the last arriving advertisements must be left out for want of room.

HILLSBORO, Iowa, Feb. 10, 1877.

"....I have taken and read the *American Agriculturist* for 15 years, and would not be without it...I transfer it this year to the name of my son, a small boy, to give him a feeling of proprietorship and increased interest in it...."

The first part of the above extract from a subscription letter, is a sample of thousands of similar ones which stimulate the editors in their work. The second part contains a valuable suggestion to parents.

Bulletin of Wool Manufacture.—We have received No. 4 of Vol. 6 of the Bulletin of the "National Association of Wool Manufacturers." This journal, issued quarterly, is the organ of the American woolen manufacturers, and contains matter of interest not only to them, but to wool growers who, to thoroughly comprehend their own business, must necessarily be in close communication with those who purchase and use their product. An article in this number on the "Wool Industry in Our National Economy," should be studied by every sheep breeder and wool grower.

Cattle Disease in England.—A serious outbreak of disease amongst cattle is threatened in England. The disease is rife in some parts of Germany and Holland, from whence importations of live stock into England is now prohibited. Already the disease has been introduced by means of imported animals, and serious fears, if not consternation, have seized upon the farmers and graziers. A great impetus has been given to the trade in American meats, which, after all, promises to become an established business. Now it is imperative for our own interests, that the possible importation of these destructive European diseases should be prevented by the utmost care and strictest supervision.

Bliss & Son's Potato Catalogue has descriptions of old and new varieties of potatoes for seed, but besides this it is a very interesting document, as it gives a report of the awards of the prizes offered last year. The largest yield of "Alpha" from one pound of seed, was obtained by H. C. Pearson, Pitcairn, N. Y., who had 1707¾ lbs. The same gentleman also took the first prize for the largest yield of "Ruby," of which he raised 1982 lbs. from one. The other yields, even the lowest, were equally astonishing. As these reports, from five different States, and one from Scotland, were sworn to, these wonderful results must be accepted as having been achieved; the methods of cultivation are given in this catalogue for the benefit of others.

Ayrshire Breeder's Association.—At the Annual Meeting of the A. B. A., held at Boston, January 18, it was reported that 122 animals had been approved and recorded for the 2nd Vol. of the Ayrshire Record. The Treasurer, Secretary and Editor having declined to receive any money compensation for their servizes, copies of the herd book were voted to them. It was resolved: That a firm may be admitted to membership, but shall be entitled to only one vote: also, That it is inexpedient to insert cuts of animals in the next volume of the Ayrshire Record. Among the officers elected are President, William Birnie, Springfield Mass., and Secretary, J. D. W. French, No. Andover, Mass.

A Work on Alfalfa.—"J. H. T.," Lincoln, N. M. There is no work exclusively devoted to the cultivation of Alfalfa or Lucern. It is treated precisely like clover, except that it is best sown in drills nine inches apart, and without any other crop; it then needs cultivation, to prevent weeds, until it takes full possession of the ground. Use 12 pounds of seed per acre when drilled, and 20 pounds broadcast.

The Rinderpest in Europe.—Its Indirect Effects on America.—A serious outbreak of the destructive cattle disease known as Rinderpest, or Steppe disease, has recently occurred in Germany. This disease is a typhoid or enteric fever, and very much resembles in its symptoms and effects, that which is known in our Western States among hogs as hog-cholera. No more suddenly fatal or more contagious disease exists. It has rapidly spread from Germany, to Holland and Belgium, and has appeared amongst a cargo of imported cattle in England. By an order of the British Privy Council, all importations of foreign cattle, sheep, and goats, from German, Dutch, French, and Belgian ports are prohibited, and all cattle exhibiting symptoms of the disease, are killed and the carcasses destroyed. The present scarcity of beef and mutton in England, will be increased by the loss of the usual imported foreign supplies, unless the shipments from America are considerably enlarged. Already it is proposed to fit up more of the ocean steamers with cool larders, for the preservation of the meat, and to build steamships specially prepared for the traffic. The largest ship in the world, the Great Eastern, may even find in this trade a reason for its existence, which its unfortunate proprietors have been anxiously seeking ever since it was first afloat, without avail so far.

"**Peruvian Guano,** its Qualities, Brands Under which it is sold, and Brief Directions for Using it. Hobson, Hurtado & Co., Agents for the Peruvian Government, 63 Pine St., N. Y." This handsome pamphlet of 40 pages is something more than a mere business circular, as it gives information as to the most important and best of all commercial fertilizers that is of interest to every cultivator, who uses guano or other concentrated manure. It describes the composition of the different brands, there being five different forms of genuine guano, gives the composition of each, shows which is the best suited to particular crops, gives the method of applying and much other useful information. The publication may be had of Hobson, Hurtado & Co., or of C. V. Mapes.

Summer Fodder Crops for Minnesota.—"T. A. H.," Otter Tail Co. Probably the best for your locality would be Hungarian grass, or German millet. Buckwheat is not healthful for fodder, and many cases of injury have occurred by feeding it. Corn planted late, in rows, and very thickly, would yield a heavy crop of fodder, which would be good for horses. German millet and Hungarian grass, are very nearly alike, and require the same treatment. The seed is sown by itself in June or July, at the rate of two pecks per acre.

Stock for a Dairy Farm.—"W. K. M.," Chattanooga, Tenn. For such a locality as yours, probably the best stock of cows to be kept would be high grade Short-horns. To procure these, some of the best native cows should be selected, and a good, pure Short-horn bull, of a milking family of cows. From this stock the future dairy cows should be raised. The great advantage of the Short-horn is, that the cows are good feeders, and when past their prime as milkers, they can be turned into beef quickly. Or it may be that a herd of pure Jersey cows might be suitable. This depends upon the market, and the demand for young bulls that would not be wanted. Jersey bull calves do not make desirable beeves.

Adamant Plows.—A new material for plow shares and mold-boards has been introduced by the New York Plow Company, Beekman St., N. Y. It is a remarkably hard metal, of even quality throughout, and so tough, that it can be broken only with difficulty. The metal scratches glass with ease, takes an exceedingly fine polish, and will not rust; it therefore scours in any soil as well as a steel plow. A silver medal was awarded for these plows by the American Institute at the last exhibition. By a peculiar arrangement of the beam, which can be moved upon the standard, the draft is brought upon the center, the pressure upon the land-side of the furrow is removed, and the plow is very easy to hold.

Proposed Cure for Warts.—"C. C.," Washington Co., Neb., gives the following as a cure for warts on cattle, viz: take equal parts of salt and lard, mix together, and rub the wart daily with the mixture.

Hot Water for the Cabbage Worm.—A correspondent in Canada, refers to our note in January last on killing the caterpillar of the cabbage butterfly by the use of hot water, says: (1) "Did it occur to you that water hot enough to kill the worm, would as surely kill the cabbage leaf, as it would kill the worm? (2) and common sense should tell you, or any other person, that a half-cooked cabbage would not grow."—*Answer.* (1) Yes.—(2) We are quite agreed.—*Remarks.* We are not accustomed to make recommendations, unless upon our own knowledge, or upon the authority of those in whom we have confidence. And we expect that "common sense" will be used in putting them to the test. The use of hot water to kill insects on plants is very old—we practised it 25 years ago, (and it was no novelty then,) by immersing potted plants in hot water. *Some insects* are killed by a less heat than many suppose, and *some plants* will stand a degree of heat without injury, that those who have not tried it would fear to risk. Soft insects, like plant lice, grubs, and some larvæ, are killed at 120° to 130°. "Iron-clads," like the Potato Beetle, require more. Almost all plants will stand immersion for a few seconds in water at 120°; fuchsias, heliotropes, centaureas, etc., are not hurt at 140°; pelargoniums or geraniums will endure 150°. The point to be aimed at is to have the water hot enough to kill the insect, and not so hot as to hurt the plant. The application is so simple that it is worth a little trouble, and the loss of a few plants, to learn just where this medium lies. We saw the recommendation in the Toronto paper, and it so accorded with our knowledge of the use of hot water in other cases, that we gave the suggestion as worthy of the attention of those, who may need to try it the coming season. We are not the only ones to whom it does not "occur" that water hot enough to kill the worm, will kill the cabbage; Maj. Hugh T. Brooks read an interesting paper on "Our Insect Enemies," at the last Annual Meeting of the Western N. Y. Hort. Society, in which he said in speaking of the Cabbage worm.: "The judicious use of hot water, say 180°, will save cabbage. Sprinkle the plants as soon as the worm appears, and repeat as often as seems necessary. The bugs can be killed at a temperature less than boiling hot, which will not injure the plants." Please recollect that we do not advise to cook, or even "half-cook" the cabbages, but to exercise "common sense."

Mark Twain's Latest Work.—When Lord Timothy Dexter published his "Pickle for the Knowing Ones," there was not a comma, period, or other point in it, but at the end of the work were several pages of nothing but punctuation marks, with a request to the reader to "pepper and salt the work to suit himself." Mark Twain has improved upon Lord Timothy, for he has not only left out the punctuation, but the matter to be punctuated, and presented a volume of blank pages for each one to fill to suit himself. Mark Twain's latest is a "Scrap-Book," with the pages gummed in such a manner that a scrap can be inserted in the neatest manner with the least possible trouble. Published in various styles and prices by Slote, Woodman & Co., William St., N. Y.

Curing Rabbit Skins.—C. Lietz, Ulster Co., N. Y. Remove any adhering flesh, using care, as the skin is very tender; tack the skin, fur-side down, on a board, and sponge it over with a solution of 3 oz. of alum in a quart of water, at intervals for two or three days, allowing it to dry each time. The requisite softness is produced by working; one way is to roll the dry skin lengthwise, hair inside, and draw it quickly through a smooth iron, or other ring; then roll the skin in the other direction, and pass through the ring again; instead of a ring, the rolled skin may be drawn against a smooth pin.

Zinc Labels for trees are of two kinds; we recently referred to one upon which the name is stamped with a die. Another, which in one form or another has been long in use, is written upon with an ink prepared for the purpose. Geo. Raphael, New Rochelle, N. Y., makes exceedingly neat tags and pot labels, with an ink greatly superior to the old copper solution. The tags, ink, wire, etc., are put up in neat boxes, and afford a handy and permanent label.

Sorrento and Inlaid Work.—The crowded state of our columns, last month, allowed but a brief notice of this handsome volume, by Arthur Hope. Short as the item was, we were chagrined to find that the name of the publisher was wrongly given. It is issued by John Wilkinson, (*not* Williamson), Chicago, and is a most creditable specimen of book making in the mechanical part, while the instructions are plain and sensible. A new feature, is the introduction among the designs of Silhouettes, to be worked out by the saw and used for inlaying. To those not versed in such matters, it may be well to say that the name "Sorrento," is applied to wood-work, cut out either by a hand-saw, or by one of the many saws worked by the foot, and is capable of application to a great many useful as well as ornamental articles, while it affords a pleasing occupation.

Life Insurance is a matter of vital interest to many people. The recent developments respecting unsound companies, make the undoubted stability and integrity of well managed institutions all the more conspicuous. Our advertising columns show that there are some life insurance companies that are as safe as it is possible for any organization to be.

The N. Y. State Agricultural Soc. did a most sensible thing at its Annual Meeting in January last. It was to choose Patrick Barry, Esq., Rochester, Monroe Co., as its President. An excellent choice for the Society, and a well deserved honor for Mr. Barry.

The Horticultural Soc., of Western New York, held its 22nd Annual Meeting at Rochester, in January last. Notwithstanding the storms and snow blockade, a goodly number assembled, and to judge from the newspaper reports, its printed proceedings will, like the previous ones, be of permanent value.

How Long can Eggs be Kept?—"W. H. T.," Winona, Minn. Eggs for hatching can be kept in the spring for several weeks, if preserved in a moderately warm closet. They should be dipped in water and their position changed once a week.

Cattle in Colorado.—The rapid growth of the live stock business in Colorado may be understood from the following statement, made by J. M. Wilson, President of the Colorado Cattle Growers Association, at their sixth Annual Meeting, recently held at Denver: "During the past year large herds of cattle have been driven into the country from Texas and elsewhere—not less than two hundred thousand having been driven from Texas alone. The great country lying to the east of us, which but two years ago was grazed by nothing but buffalo, is now occupied by thousands of head of cattle. Beaver Creek, the South Platte, Republican and all their tributaries, which were looked upon as being out of the world and only fit for Indians and wild animals, are now all occupied by herds of cattle. This year the herds of Colorado and Kansas will mingle, and the Great American Desert, which has intervened betwixt us and the States, will be bridged over by the cattle men, and a continual line of settlements will exist from here to the Mississippi. The increase in number and size of our herds has forced us to occupy and graze these lands."

Abnormal Retention of a Fœtus.—"W. L." Numerous cases are recorded of the retention of a fœtus within a cow for months, and even years; nearly forty cases are cited in the English veterinary journals. Sometimes the fœtus is expelled in a partly decomposed condition, and the cow recovers, but usually the animal suffers from fever, and putrid infection until death ensues. In some cases, the fœtus has become dried, by absorption of its liquids, and its skin hard and dry like tanned leather; or the soft tissues have disappeared, leaving only the bones, which have been found in the uterus on slaughtering the animal.

The Best Turkeys and Ducks.—"T." The Bronze Turkey is undoubtedly the best. The Pekin Duck is a large bodied bird, and is highly spoken of, but perhaps for all purposes, the Rouen Duck would prove the most satisfactory. When well kept, they have been made to weigh 15 to 18 pounds the pair.

His Wheat Lodges.—"J. B.," Saint Paul, Oregon. When wheat grows very rank in the straw, it is apt to fall down under heavy rains. The usual remedy is to sow very thin, not over one bushel of seed per acre, and to sow broadcast upon the wheat 5 bushels of salt per acre. In your climate, this may be done at any time during the winter; when the wheat is 5 or 6 inches high would be a good time.

How Manure is Wasted.—"Farmer's Boy," Nova Scotia. Manure is not injured by the frosts and thaws, but it is when washed by rains, which dissolve out of it the most valuable portions. Therefore, it is carefully piled in heaps, or kept in cellars, or under a shed, by good farmers, instead of being thrown into the yard, to receive all the wash from the roofs.

How to Use Salt Mud.—"O. B." Salt mud may be spread upon the meadows as it is hauled in the winter or fall. Any lumps in it are easily broken down by frost and rain in the winter. The meadow would be benefited by a harrowing in the spring, which would spread the mud more evenly.

Special Fertilizers.—Ville's and other Formulas.—The subject of artificial fertilizers is now receiving more attention than ever before, and the practicability of applying special manures to particular crops is in a fair way to be thoroughly tested by practice. The experiments of Ville, in France, have done more than anything else to awaken attention to this subject, and now that it is possible for the farmer to get of the essential constituents, Ammonia, Phosphoric Acid and Potash, exactly what he pays for, all respectable establishments, selling by actual analysis, his or other formulas will be extensively tested in this country. Ville's Complete Manure, consists of Ammonia, Phosphoric Acid, and Potash, in the quantities and proportions in which they exist in barn-yard manure, for which this is proposed as a substitute. This Complete Manure is used for wheat and most other grains and for grass, while for other crops the proportions are varied; for example: the formula for turnips, etc., has much less ammonia, and more potash and phosphoric acid; for clover and other leguminous crops, the potash is still more increased, while potatoes require nearly twice as much potash as is contained in the Complete Manure. Such is the demand for these formulas, ready prepared, or for the fertilizer that shall afford these constituents in the cheapest and most available form for the farmer to mix himself, that a company has been formed to meet it. This company is the Mapes Formula and Peruvian Guano Co., and Mr. Charles V. Mapes is its manager. There is no secrecy about these formulas, hence the cultivator knows exactly what he is working with, and if he wishes to experiment with formulas of his own, he can be provided with the materials. The same company supply Peruvian Guanos, in large or small quantities, direct from the warehouses of the agents of the Peruvian Government.

Potatoes to be a Profitable Crop for 1877.—This esculent has become by habit almost indispensable. Few families fail to have it on the table at least once a day, however high the price. Last summer's drouth so diminished the yield, that there is now a scarcity in many places. The Colorado Beetle spread so widely, to the very edge of the Atlantic, last season, that very many farmers are afraid to plant largely this year, and the present prospect is that there will be a small crop, and consequently high prices. Those, therefore, who produce a good crop, will be likely to find it unusually profitable. A little extra care will enable any one to successfully fight off the beetle, no matter how abundant. The new book on "Potato Pests," gives full directions, and it will pay every farmer to get it. Fifty cents for this book in paper covers, or 75 cents bound in cloth, will be a good investment for every one who grows potatoes. Sent post-paid from this office.

Short-horn Milkers.—Geo. Hoover, Fulton, Ohio, writes that his thoroughbred Short-horn cow "Fiena," 5 years old, when her calf was 4 weeks old, gave 24 quarts of milk per day, in addition to what the calf took, and when the calf was 6 weeks old, the surplus yield was 20 quarts. Her dam, "Belle of Lorain," produced 20¼ lbs. of butter in 10 days, from pasture alone.

The Corbett Incubator.—"M.," New Bedford, Mass. Mr. Corbett no longer resides at Hicksville, and we know of none of his incubators that are at present in operation. Mr. C. has an office at No. 7 Warren St, New York, where information can be had.

The Prickly Comfrey.—So numerous have been the inquiries for this new forage plant, noticed in January last, that Mr. Ashburner, the gentleman in Virginia, who has experimented with it more largely than any one else in this country, has arranged with Messrs. R. H. Allen & Co., of this city, to supply sets to those who wish to make a trial of it. Those who have written us in regard to the plant, are referred to the advertising columns, as we cannot answer all.

"Winter Chat about Gardening."—"G. W. S." Your pleasant article is too late to be seasonable. No address—no post-mark, and we take this method to thank you, and to ask you to report on your blight treatment.

The Japan Pea.—"W. H. W.," Reading, Mass. We cultivated this several years ago, and told all about it, with figure, in February, 1874. Probably it will be of little or no use to you. In the Southern States it may be of value as a fodder plant, or as a crop for green manuring. The advertisement says, it "is a new and extremely valuable vegetable, and is attracting great attention wherever introduced; is pronounced by all who have grown it to be *superior* to any pea grown; is said to be a most valuable acquisition, as it can be used both in a *green* and *ripe* state." This conveys the idea that it may be used like ordinary peas. "Said to be" is very safe, but as the pea has been sold in the Southern States for the last four or five years, why don't the chap *try* it and know? If he were condemned to live upon this pea for a week, he would have the very positive opinion that, for whatever other uses it may be valuable, human food is not one of them, at least to the American.

Cover to a Pork Barrel.—In the Household Department for last month, (Feb.) we gave a description of a cover to a pork barrel, suggested by our correspondent, L. D. Snook. We are informed by the proprietor of the "Marshall (Mich.) Statesman," M. Morgan Bates, that he is general agent for parties in that city who hold a patent covering *all* hinged barrel covers. This being the case, the device can not be used without infringing upon the rights of others.

The N. J. State Agricultural Society is a very wide awake institution. Its fair, last Sept., was the only one that we have heard of held anywhere within reach of the Centennial, that was not a financial failure. In the list of officers chosen at a recent meeting we find the following: *President*—Hon. Amos Clark, Elizabeth; *Recording Secretary*—Wm. M. Force, Newark; *Corresponding Secretary*—P. T. Quinn; *Treasurer*—Samual Manning, Plainfield.

Sundry Humbugs.

There is no greater humbug than some of our laws; or perhaps our administration of justice. The laws are well enough, but they do not enforce themselves. The statute book says "thou shalt not," but no one minds it. There are abundant

LAWS AGAINST LOTTERIES,

yet these are carried on in open defiance of the law. Papers that respectable men patronize, boldly publish advertisements of lotteries. A clerk takes money and buys lottery tickets — respectable man thinks the clerk a rascal, and sends him to prison. Clerk saw the advertisement of the lottery in respectable man's favorite paper—but then respectable man is not to blame, oh, no! It is but little use for us to oppose lotteries, so long as the laws against them are not enforced, and so long as papers advertising them are encouraged—or at least not discouraged—in this course by the business portion of the community. We have a pile of lottery schemes, and they seem to be increasing. Some of these are sent with letters, asking our opinion. Others, taken by the bait put out by Russel & Co., send us a letter to be forwarded to R. & Co., if we think them "all right." We are not engaged in that business, thank you. Russel & Co. stand a much better chance of being struck by lightning, than they do of getting any business through *our* agency. As to "our opinion," asked by various parties, we give that in brief, in three sections. 1st. All lotteries, for whatever purpose, are positively wrong. 2nd. A large majority of the lotteries are out and out swindles, conceived in fraud and carried out in rascality. 3d. There is one class of persons who never lose money by lotteries—those who let them severely alone....Between the time our remarks on the

TEXAS LAND SWINDLE

were written, and that of the appearance of the exposure, the letters of inquiry poured in upon us like a flood. The thing has been so thoroughly exposed here and elsewhere, that it has now no more life than a last years bird's nest. Selling "deeds" at a dollar apiece, for lots in a place that has no existence, with an occasional chance of selling a few lots, adjoining the one given away, was a business too good to last. Taking advantage of the excitement relating to Texas, a chap in Toledo, O., started a very clever swindle. There are many innocent persons who think that a project can have no humbug about it, because no money is asked for—little do such persons know of the resources of humbugging, as this case shows. This started as

A SURVEYING PARTY IN TEXAS.

the following advertisement appearing in the papers:

"Wanted.—Ten young men to form a surveying party in Texas; good wages and free fare. Address, with stamp, Drawer 169, Toledo, Ohio."

About the same time one Young, *alias* Lee, hired said box at the post-office, and letters began to come; they came more and more, and in such quantities that the suspicions of the officials were aroused. One of the letters having a "return" notice upon it, gave a clue to the writer, in Cincinnati, and the Toledo post-master wrote to him, asking about the affair. The Postmaster received the following letter, that had been sent the writer by Young & MacRae, to which his letter was a reply;

Office of Young & MacRae,
Toledo, Jan. 13, 1877.

Mr. ——— :

Dear Sir:—Yours of the 11th inst. received. Our party is about full, but think we can give you a place. If you have never studied surveying, we advise you to begin at once, so as to be prepared to start on the 15th of February. You can, if you desire, pursue your studies at home. We will furnish you with text books if you will

SEND US SEVENTY-FIVE CENTS

for postage and use of books. Yours, etc.,

Young & MacRae.

Here was the "milk" in that "cocoanut." Seventy-five cents in each letter, and they came by the bushel, was a good business for Mr. Young, or Lee, or Young & MacRae, or whoever opened the mails. As the letters all *came to* Young & MacRae, and no books, "surveying" or other, ever went *from* them, the officials assumed that the post-office was being used for swindling purposes, and a U. S. Marshall went to arrest Mr. Young & MacRae, but he had suddenly left for Cincinnati, having left orders with some one to send his letters there by express. By means of an express parcel he was caught, and taken back to Toledo. Poor Mr. Young & MacRae! Instead of taking in three quarters from each letter, he has quarters for one in the Toledo jail. Instead of surveying on the broad prairies of Texas, with "good pay and free fare," poor Young & MacRae has no pay, and his fare that of the prison; while all his "surveying" is done between iron bars. It is very rare that those who throw away their money upon swindlers, can get even so much satisfaction as this ...Some one, who appears to have neither "name" nor "local habitation," complaineth that he wrote us last January and expected to see an answer in this column, and seems to feel badly because he

WAS NOT ANSWERED.

If his letter was, like the present, nameless, dateless, and without address, it is easy to see why he found no reply. We refer to the matter here to emphasize the statement that we will not answer or notice anonymous letters of any kind, more especially not those asking advice about humbugs, where everything should be open and in good faith.....There must be a large business done in

TRASH CALLED "NOVELTIES."

As we get a great number of circulars issued from concerns in various localities, mainly in New England, New York, New Jersey, and Penn. The circulars or pamphlets are, many of them, excepting the cover, or name, precisely alike, showing that many of the concerns are in league. The country appears to be flooded with these things, which offer a singularly mixed lot, of gimcracks, books, cards, etc.—a few possibly useful, others probably amusing, and many positively pernicious. The things are offered at wholesale, with great inducements to persons to act as agents, and at retail, advertising them in a manner very persuasive to young persons. In looking over one of these lists, we find the number of useful articles very small, and we can see no excuse for the existence of these novelty shops, except that they must have a large sale for articles that should not be sold. If some of the books, cards, and other things offered are as bad as one would infer from the advertising, nearly all these concerns could be shut up, under the law against selling improper things. But it is one of the tricks of swindlers, to make it appear that they offer improper books, etc., while the articles are in reality merely useless, as they well know that those tempted to buy in the hope of getting an obscene book or picture, will not dare to complain. The thing has reached the dimensions of a thorough nuisance, and will only be stopped when people cease to buy....Farmers continue to write us, concerning "Pampas Rice," and "Ivory Wheat," and we wish to be understood very distinctly on this point. We place these under Humbugs, not because the articles in themselves are useless, but because they are sold under false representations. If the potato were offered as the "Great Peruvian Esculent," at $5 the tuber, the transaction would be a humbug, though the value of the potato would be unchanged. So selling a seed as a "Rice" or a "Wheat" when it is not properly either, any more than it is an oat, a rye, or any other grain is a fraud. We insist that articles should be sold under their proper names, and proper uses stated. As we have already said, we have very positive evidence—so far as the seeds go, and which we shall make more positive when the plants are grown—for we have obtained seeds of both, that they are only forms of the Durra, which we have described in full, in the *American Agriculturist* for February, as a useful forage plant. Another wonderful wheat is offered this season, which we shall soon know more about....The "note of preparation" is being sounded in advance of a wonderful—no, that is no name for it—prodigiously astounding Corn. Farmers beware! Before unheard of seeds, offered by before unheard of parties, are things likely to prove most profitable—when let alone!.. .Inquiries continue to come about

CLARK JOHNSON, M. D.

We sometime ago stated that this was no other than Huyler, of Old Mother Noble, and various other kinds of notoriety, and that the letters coming to Jersey City, to C. J., M. D., were taken by a messenger to Huyler in N. Y. This state of affairs does not now exist. The post office authorities refused to deliver Johnson's letters to any one but Johnson, and now a person by the name of Johnson has been found, to stand in the place of the shadow. The questions put to us respecting the threatening letters that are being sent in the name of C. J., to parties all over the country, we can not answer—as we are not lawyers. Those who have been foolish enough to sign an agreement, even with a quack, unless fraud can be shown, will probably have to abide by its terms. Those who let quack medicines of all kinds alone, avoid all such troubles....Medical matters present very little novelty. Some year or more ago we showed up the character of the

"CLINTON MEDICAL AND SURGICAL INSTITUTE,"

judging it by the character of the publications it sent out, but it now appears that it is something more than a simple humbug, it is a downright fraud. The concern was organized under the general law, as a corporation, some 12 corporators, (mostly with M. D. to their names), signed the certificate of incorporation, the thing was recorded, and every thing seemed right, proper and lovely. —But the Supreme Court of Albany differed with James Bryan, "M. D."—Complaint was made that the certificate of Incorporation was obtained by fraudulent means. That the names of the 12 corporators were all "written by one James Bryan," that he "caused to appear" before the Notary Public "persons other than those whose names were attached to said certificate and there and in presence of said notary to personate and represent themselves to be the persons whose names are on such sertificate... .they falsely representing and personating them." As this charge was not disproved, Judge Westbrook declared the certificate of incorporation "fraudulent and void" and enjoined Bryan, and everybody else against pretending to be the "Clinton Medical and Surgical Institute." There are many persons, who are not familiar with such matters, who do not know that a Medical College, or regular Medical Association, *never* advertises to cure diseases or to sell medicines. The very fact of their advertising, in this way, shows their character. If the various concerns assuming the names of University, Institute, Association, etc., could be sifted, most of them would make as bad a showing as this "Clinton" concern, and turn out to have but one man at the bottom. This Bryan did not like the seizure of his improper books and circulars, and didn't like many other things, so

JAMES BRYAN, "M. D." WENT TO LAW.

The law is a very good thing when one has a good case, but many who go to law come out "wiser" if not "better men." Like many other things there are two sides to it. Many innocents who have sued us, thought that they had only to present their cases, swear that they had been damaged, and walk out of the court with the thousands in their pocket. But while there is law, there is also justice, and the defendant has some rights. Very few quack doctors would go to law, did they know that the one whom they prosecute can put *them* under examination. It is very nice to be prosecutor, but when they occupy the position of a witness, and have to answer such questions as may be asked them, or go to jail for contempt of court, they find that they get a great deal more law than they bargained for. Bryan was examined in his own case, and we wish we had space to publish his examination in full, for a more complete showing up of the whole quack—or as he calls it—"patent" medicine business, we have not seen, (unless it be the case of the "M. D." who sued us not long since for calling him a humbug in these columns, and then made us *prove* it in Court). The number of places at which he had done "business," under a varied assortment of names, and the number of partners he has had first and last, about whose past or present he could tell nothing, were astonishing. Such sudden shortness of memory as he was at times afflicted with, showed a remarkable mental condition for an "M. D." Indeed, while he could recollect that he received a diploma from a Medical College in England, he could not recollect its name, nor names of any of the faculty! Then he had another diploma from a College in Cuba, but he couldn't recollect the name of that; he didn't go to Cuba, but was examined in New York by some one who was not an officer of the college!! James Bryan is only of consequence as a representative of the numerous quacks who flourish their titles, and lead unsuspecting persons to think that the title M. D. is a guarantee that its holder has studied medicine. A real title is only won by much study and hard work, and the procuring of it is too much of an event in a man's life, to allow him ever to forget the names of his instructors or that of the college which granted it. As to the diplomas that are bought—we do not wonder that even a quack is glad to forget all about the transaction.

Our House Plans are not discontinued, but for sufficient reasons, only *temporarily* postponed.

The N. J. State Horticultural Soc.—The Second Annual Meeting, held at New Brunswick, Feb. 1st and 2nd, was well attended, and plans laid for the future usefulness of the Society. Among other plans proposed, is the collection of data relating to the early history of fruit culture in the State.

Weevils.—"S. B.," Tuscarawas Co., O. The specimens sent are the true European grain weevil, *Calandra granaria*, and less common in this country than the black weevil. To get rid of them is a difficult matter. One of our friends, who was greatly troubled with weevils, was asked how to get rid of them; he replied that he knew but one *sure way*—"Burn the barn." Preventives are better than cures; the insect is not brought in from the fields, as some suppose, but breeds in the granary, hence the importance of having no cracks or other hiding places. It is stated that a heat of 122° Fah., while it will kill the insect, will not injure the germinating power of the grain. In Europe the only method regarded as insuring safety, is to dry the grain at the temperature mentioned, and then store it in granaries lined with sheet iron, with openings so accurately closed that even this minute insect can not find an entrance. The parent insect lays her egg on the outside of the grain; the young grub eats its way to the interior, and there completes its growth and transformations, and when the perfect weevil comes out, only a hull is left. Frequent moving of the grain is considered of use, as interfering with the operations of the insect.

Blue Grass in Washington Ter. is regarded as a "terrible evil," as we learn from a letter from there, shown us by a friend. We should like to know more about this. The first point to be settled is, whether *their* Blue Grass is the same as *our* Blue Grass. Will some one of our many readers there send a specimen when it comes in flower, and tell us more about it?

Water Witching.—"W. C. G.," Bergen Co., N. J. The use of the divining-rod is well called water witching, and belongs to the dark age when "witching" was popularly believed in, and witches were drowned and burned. The claim that a magnetic influence is exerted by the underground current of water, or the hidden vein of ore sought for, is simply "bosh," for an influence so weak that it will not effect the magnetic needle, could not possibly affect a forked twig of apple, witch hazel, or any other wood. This popular delusion is kept up by occasional successes of operators who find veins of water. As water is almost universally present beneath the surface, there are a hundred chances to one that water will be found by digging, and the hundredth failure is excused for some paltry reason which is not doubted. Thus the superstition lives, and it is strange that some scientific people are yet found to put faith in it.

Loss of Weight in Old Hay.—"C. B.," Northampton Co., Pa. The weight hay will lose in 12 months, depends upon its condition when first put up. If cured very dry, timothy hay will lose very little, and may possibly gain something. Clover hay, cured in the cock, and put up green, may lose nearly a quarter of its weight in the course of a year.

The Canker-Worm—Now!—Whatever is used to prevent the ascent of the trunks of the trees by the female (wingless) insect, should be put on early, as they come out after a few warm days. Heavy brown paper, applied closely, so that the insects can not get under, and smeared with cheap printer's ink or tar, is as simple and cheap as anything. But the ink, tar, or whatever adhesive barrier be used, must be looked after every few days. Dust, dead insects, or something else may form a bridge, by which the live insects can cross the barrier, when the work will have been in vain.

Another Canker-Worm Guard.—A correspondent at Selma, O., writes that the following, invented by Prof. Claypole, of Antioch College, has completely "circumvented the canker-worm" in his vicinity. It is as follows: Surround the trunk of the tree with a piece of inch rope, nail it fast. Surround the rope (and tree too) with a strip of tin, 6 in. wide, the center of the tin fitting the rope closely, and fastened to it securely. This forms a channel about three inches deep above and below the rope, which stops the ascent of the insect. Simple, cheap, and we doubt not as effective as a more complicated affair.

Planting Corn in Drills.—"A. F. N.," Beaver Dam, Wis. Our method of planting corn in drills is with the Emery Corn Planter. The ground is plowed and harrowed, and the corn is then dropped by the planter in rows three feet apart, and two or three grains 18 inches apart in the rows. The planter opens the drill, drops the seed, covers it, and rolls the ground over it, leaving a track so that a cultivator can be used, if needed, before the corn shows above ground. Or, in place of the drill, open a light furrow with a one-horse plow, drop the corn by hand, and cover with one of the light corn-coverers, or with a harrow frame without teeth.

Quinces.—"L." Because the quince will survive in a poor, wet place, it is no proof that it needs such a locality. Give it good soil; occasional manuring, and it will pay for the trouble. Set 8 to 10 feet apart. If kept in a bush form, with several stems, do not allow too many to grow, but keep the center open to light and air.

Tubs for Butter.—"G. E. W.," Dresden, Me. The tubs that we have found best in use for packing butter, are new white oak pails holding 50 pounds. Scald them with boiling hot brine, and then soaked thoroughly with cold brine, before packing the butter. When a churning is ready to be packed away, sprinkle the bottom of the tub with clean Ashton salt, and press the butter down level in the tub; sprinkle a little salt upon it, and lay a wet muslin cloth over it. It so remains until the next churning, when the butter is packed in the same manner, without disturbing that first packed. When the tub is filled even to the top, cover the butter with dry salt, lay a cloth cut to fit the tub over the salt, and fasten down the cover. If the butter is good, a tub so packed, and kept in a cool *sweet* cellar, will keep well for a year.

Litter for Poultry.—"A. W. C.," Boston, Mass. Fine cut straw, or leaves from hemlock or pine boughs, would answer well for litter in poultry-houses. Dry road dust, or sifted coal ashes, are as good as sand or dry earth, and there is no difficulty in laying up a supply in the fall while the weather is dry.

Where do the Lice Come From?—"J. A.," Whiteside Co., Ill. Lice are produced from eggs, and if lice are found upon cattle, they have either been hatched from eggs laid upon the skin by a previous stock of vermin, or they have come from other cattle. An excellent remedy against lice is to rub along the spine, poll, brisket, and inside of the thighs, a mixture of four ounces of lard, one table-spoonful of sulphur, and one table-spoonful of kerosene oil.

Worms in Horses.—"H. A. N.," Saline Co., Kansas. The most effective treatment for the expulsion of worms, from a horse, is to give each morning in the feed half a dram each of calomel and tartar emetic, for four days; the fifth day give a pint of linseed oil. If all the worms are not expelled, repeat in a week.

Shall we use Lime?—"W. W. B.," Buffalo, N. Y. Where barn-yard manure can be procured for 50 cents a ton, it is not worth while to go out of the way to purchase lime at 50 cents a cubic yard. There is more value by far in a ton of manure, than in a yard of lime. When lime is used, it is reduced to a fine dry powder, by slacking with a little water, and is then spread evenly upon the plowed soil, and harrowed in.

Farming in Colorado.—"W. C. C.," Herkimer, N. Y. If a person has determined to go to Colorado, the sooner he gets there the better. The season opens early, and work begins in March. Every crop raised in the East can be produced there by irrigation. Particulars about lands, etc., may be learned from J. Max Green, of Greeley, Colorado, or of Jay H. Boughton, of Fort Collins, which is not far from Greeley.

Comparative weight of Pig's Heads.—"J. A. R.," New Market, Va. One cannot base a rule for the weight of any pig's head upon the weight of one from a pig weighing 100 lbs. If such a pig's head weighs 9 lbs, it by no means follows that a pig weighing 200 lbs should have a head weighing 18 lbs. The head and other offal does not increase in the same ratio with the weight of the animal; the heavier the carcass, the less is the comparative weight of the offal.

Currants and Gooseberries in Kansas.—"Mrs. L. B." "They" who say these can not be grown in your State, probably did not try. They will do best with partial shade; give a good dressing of decomposed stable manure every fall, forked in around the roots; keep the bushes heavily mulched during summer, with three or four inches of straw, bog hay, or other litter. Every autumn cut back the new wood one-third to one-half, and thin out all branches that make the bush too much crowded.—Best Currants, Versailles and White Grape. Gooseberries, Houghton and Downing.

The N. Y. Horticultural Society.—This new Society shows a great deal of activity, and is at once manifesting its usefulness. Regular Monthly Meetings and Exhibitions, at which prizes are to be awarded, will be held at the Society's rooms in West 33d St. The first of these was held on Feb. 6th, at which some very interesting plants were shown. Wm. Bennett, Flatbush, L. I., took the first premium for single Chinese Primroses. S. Henshaw, New Brighton, Staten Island, took the first premium for 12 best Camellia flowers. Certificates of Merit were awarded to Wm. C. Wilson, Astoria, L. I., for an unnamed Fern from the Sandwich Islands, grown in a basket, and drooping six feet or more. To Wm. Blount, Jersey City Hights, for a new dwarf White Pink, having flowers two inches across, and of fine form; it is entirely distinct, being apparently a hybrid between a white Monthly Carnation and the hardy garden Pink; it is perfectly hardy. Wm. Bennett received a certificate for a finely marked, crimson and white, seedling Camellia, named "Nellie." Mr. Bennett added greatly to the interest of the Exhibition by a collection of rare hothouse plants, among which was a basket in which were massed some two dozen plants of the new double Poinsettia, and another containing a similar number of *Anthurium Scherzerianum*, together with some new species of Aralia, stems and foliage of which might be compared in grace and beauty to the spray from a fountain. John Jones, Madison, N. J., was awarded a special premium for cut Roses, among which were some gorgeous flowers of "Cornelia Cook," a delicate straw-colored rose of enormous size and perfect form. At the next Monthly Meeting, March 6th, a lecture will be given by Augustus Boileau, on the training of fruit trees in the Espalier and other methods. Lectures or Essays are to become a feature of these meetings, a committee being elected to take the matter in charge.

Caponizing Poultry.—"C. R.," Chillicothe, Ohio. Instruments for making capons are sold by H. H. Stoddard, of Hartford, Conn. The method of operating is described fully in a little book published by the Orange Judd Company, entitled "An Egg Farm," which is sold for 75 cents.

Posts Reversed.—"J. S.," Nova Scotia. If posts last longer placed top end down, (which we are not prepared to admit), it is not for the reason assigned, i. e., that water finds any more difficulty in passing in one direction than in the other. There is nothing in the structure of wood that corresponds to veins and arteries in animals; an examination with a microscope would correct this popular idea.

Imperial Egg Food.—"J. B. U.," Hagerstown, Md. There is nothing injurious about the egg food referred to. It is a tonic and a stimulant, but unless the hens are well kept and well fed with warm food, they can not be made to produce eggs by this or any similar condiment. There must be something to stimulate. It is a good *help* to good food, but no substitute for it.

Peanuts.—In 1875, there were imported into Marseilles, France, from Pondicherry, 180,000 bags of peanuts to be pressed for their oil.

A Sick Calf.—"T. H.," Washington, N. C. For dysentery in a calf, caused by exposure to cold, we would give warm drinks of oatmeal, with a teaspoonful of ground ginger stirred in each, and made quite sweet with white sugar. Alternating between these and the usual food, a teaspoonful each of prepared chalk and essence of peppermint may be given in a teacupful of water. Strong coffee would be hurtful rather than helpful.

Lady Grape.—"B.," Coffyville, Kansas. By "White Lady," we presume you mean the "Lady." A fruit should never have two names where one will answer. All that can be said is, that it promises well, but has to stand the test of time. We do not recommend one nurseryman in preference to another. All the leading grape growers have it.

Immortelles, or what we call "Everlasting Flowers," employ many persons in their cultivation in the south of France, while the manufacture of them—bleaching, dyeing, and making into bouquets, wreaths, crowns, etc., employs 1,500 persons in Paris. On fete days, such as All Saints and All Souls' days, 25,000 wreaths are used to decorate the tombs at *Pere la Chaise.*

Cutting Brush.—"J. S.," Nova Scotia. The best time to cut alder, birch, and other brush, is just when it has made its growth for the season.

Milking Tubes.—"J. G.," White Plains, N. Y. For relieving cows with sore teats or caked udder, of their milk, the silver tubes made by Geo. P. Pilling, 701 Chestnut St., Philadelphia, and recently described and illustrated in the *American Agriculturist*, may be used. The set of four tubes cost $2.00 sent by mail.

To Use Wood Ashes.—"W." Scatter them evenly over the surface of the ground; about a peck to a square rod is a good dressing of unleached ashes. If they are leached a bushel to the rod would not be too much.

A Poinsettia has been raised in England, the bracts, or brightly colored leaves of which, formed a circle of 17½ inches in diameter.

Crops Without Manure.—"G. F.," Camden, N. J. Such crops as cabbage, lettuce, tomatoes, and other garden vegetable, can not be raised profitably without stable manure. Guano and other fertilizers are useful occasionally, but to succeed with these crops, a good basis must first be laid with rich manure.

The Double Poinsettia.—Having been the first to describe and figure this plant, we have a paternal interest in its welfare. The first specimen we have seen, except the dried one brought here by Mr. Roezl, was exhibited by Mr. George Such, at the Annual Meeting of the N. J. Horticultural Society, February 1st. Though a small cluster, from a young plant, it sustains all we have said in regard to its great value to florists.

Evergreens in Pots.—Some ten years ago we called attention to the value of small conifers in room decoration, and exemplified it by planting two window boxes with compact neat specimens of Retinisporas, Hemlock, Golden Arbor Vitæs and similar trees, which made a cool parlor cheerful all winter. Just now we find that the fashion is starting up in England, and it is so eminently sensible that it is likely to be popular. Being endorsed abroad, perhaps it will be taken up here.

Crossing Poultry.—"Subscriber," N. Y. The crossing of breeds must be done with judgment, else no good is likely to come of it. To cross the Houdan on the White Leghorn, for instance, can scarcely have any good result, as they are both non-sitters, and the cross can not be any improvement on either of them. Such a cross seems to be purposeless, and is therefore not a judicious one. There should be a distinct purpose aimed at in crossing. For instance, a hardy fowl, but a poor layer, might be crossed on a tender one that is prolific, with the prospect of getting a hardy cross that would be a moderately good layer. Occasionally fowls are improved by crossing, and then close breeding, as the Plymouth Rocks, which are a cross-bred race originally; but far oftener they are spoiled. A new breed that is of value, is produced but once in many years.

Linnæus the Great Botanist, and naturalist generally, died Jan. 10th, 1778. The hundredth anniversary of this event will be celebrated at Stockholm next year, by the unveiling of a monument.

Resurrection Plants.—"Mrs. S. J. McL.," Ohio. The plants you send bits of are both known as "resurrection plants." The one called "California Moss" is *Lycopodium lepidophyllum*, and is one of the club-mosses. The other comes from Asia, and is *Anastatica Hierochuntina*, also called the Rose of Jericho. Both plants are as dead as they possibly can be, and it makes no difference what "treatment" you give them. Though dead, they will spread open when wet, and curl up on drying—a mechanical and not a vital process.

Poultry for Eggs and Marketing Eggs.—"O. L. R.," Dresden, Iowa. Houdans are non-sitters and prolific layers. Many eggs are shipped from the West to New York and other Eastern markets. E. & O. Ward, No. 279 Washington St., and Myers & Alley, 83 Murray St., New York, Commission Agents, can handle any produce sent to them.

Tomatoes from Bermuda.—The first arrival this year was on January 17th. There were only four boxes, but enough to begin the season with. There is now but a gap of a few weeks when fresh tomatoes may not be had from open air culture; of course those grown under glass may be had at any time.

Sorrel Tree.—"Mrs. M. L." The seeds of this, if you could get them, require more care than an amateur would be likely to give, and it would be a very long time before you could raise much of a shrub. The leading nurseries offer the tree at moderate prices.

Grease in the Heels.—"J. T. N.," Tracy City. When "grease," or the watery eruption known by that name, breaks out persistently on a horse's heels, it shows that the blood is diseased, and outward remedies are useless. A regular course of physic should be given. We would give first eight ounces of Epsom salts, with half an ounce of ginger, twice in a week, afterwards one ounce of hypo-sulphite of soda every night in the feed. Every morning a dram of sulphate of iron, with half an ounce of powdered gentian root may be given. The feed should be hay and crushed oats, and no corn should be given until the disease is removed.

A Cluster of Pears.—W. A. Barrister, Esq., Newburyport, Mass., sent us a photograph of a cluster of pears, in which the fruit is arranged at the end of a branch as compactly as grapes in a bunch. There were 35 pears, and there might have been more had there been room to put them. They are of the old and good amateur variety *Bezi de la Motte.*

Tumor in a Heifer.—"T. G. C.," Bristol Co., Mass. A tumor growing in the uterine passage, can easily be examined by oiling the hand with linseed oil, and carefully inserting it. The shape and character of the tumor can then be discovered. If of a convenient shape, it may perhaps be removed by passing a copper wire around it and twisting it a little every day, until the tumor is separated. If the exposed substance is the uterus, which is not likely, it can thus be discovered.

Saw-dust as an Absorbent.—"H. S. G.," Rose Co., Ohio. Saw-dust will make a very good absorbent for mixing with night-soil for its removal in the absence of earth, coal-ashes, or muck.

Roots for Hogs.—"P. E. P.," Greenboro, Del. Mangels are more easily grown in our climate than turnips or carrots. They are also as nutritious as these, if not more so than turnips. They are to be preferred to any other root crop for hogs, sheep and cattle.

Cement for a Cellar.—"R. W.," Fayette Co., Ill. Where the ground is level, and wet, it would be best to have the cellar above ground. It might be built of double logs, cemented on the outside and inside, and the space between filled with earth. Such a cellar would be frost proof.

The use of Stanchions.—"D. J. S.," Georgetown, Ohio. The stanchions are placed at the head of the stall, with a feed trough outside of them. The cow's head is put through the stanchion, and the post is then pushed to its place, so that the cow is held by the neck, and can move neither forwards nor backwards. The standing floor is just so long that the hind feet are upon the rear edge of it, and the gutter is behind the floor. The droppings then fall into the gutter, and are out of the way of the cow's feet.

Wool Product of California for 1876.—The Wool Report of E. Grisar & Co., of San Francisco, gives the total production for the whole State as follows:

	lbs.
Total spring wool	30,065,519
Total fall wool	24,235,451
Pulled wool	2,250,000
Grand total for 1875	56,550,970
Of this was exported	52,588,311
Value of exports	$8,200,000

The above figures represent an enormous growth of this pastoral interest in California. If the average yearly product is taken at 8 lbs. per sheep, the number would amount to over 7,000,000, or at least one-sixth of the total of all the flocks in the United States and Territories. When all the great western pastures on both sides of the Rocky Mountains are occupied, only to a very moderate extent, the wool product of America can supply the whole world. It is encouraging to notice that the wools of California are becoming popular with manufacturers, and that there is a ready sale for all qualities, some of which, bringing 10 cents per pound, still fill a place in our markets with profit to the growers.

The Jerusalem Artichoke Again.—On reading the reference to Mr. Palfrey's History of New England, communicated to the *American Agriculturist*, (page 49), by the Hon. W. C. Flagg, I addressed a note to my venerable friend, the author of the History, asking for the authority upon which the statement was made, that our Indians raised "a species of sunflower, whose esculent tuborous root resembled the artichoke in taste." Mr. Palfrey replies: "I presume I had authority for my statement, not only because such was my habit, but because the subject was out of the range of my studies, and I could scarcely venture to do more than transcribe from something before me. When I am able to go to the Library, I will make some search. I should begin by looking into Josselyn's books, his 'New England Rarities' and 'Account of two voyages.' He pretended, you know, to be a naturalist, after the measure of those days."—I have looked over the first of these books (Tuckerman's edition), but find nothing which bears upon the point. It would be very interesting to find any cotemporary mention of the "artichoke" at the first settlement of the country. But it seems, on the whole, more likely that the reference, when found, may relate to the Indians much further west than New England. The accounts of the French explorers of the region between the Great Lakes and the Ohio and Mississippi should now be searched. A. Gray.

Catalogues Received.

As spring approaches we do not find the paper half large enough to allow us to say all that we would like. There is a general crowding up, not only of reading matter but of advertisements, and our notices must also be crowded. We usually try to notice in brief the leading features of the Catalogues, but this month our friends must be content with merely a bare acknowledgement.

SEEDSMEN.

Beach, Sons & Co., No. 7 Barclay St., N. Y., continue the "American Garden" as a quarterly, and catalogue.

Benson & Burpee, 223 Church St., Philadelphia. Vegetable seeds, with specialties in field seeds.

Hugo Beyer, New London, Iowa, has his seeds "grown in and for the West."

B. K. Bliss & Sons, No. 34 Barclay St., N. Y. Their main catalogue, a ponderous tome; the Gardener's Almanac and Abridged Catalogue, more compact, and a special Potato Catalogue.

J. Bolgiano & Son, Baltimore, Md. Illustrated list of vegetable and flower seeds.

Alfred Bridgeman, No. 876 Broadway, N. Y. Separate catalogues for vegetables and flowers, both neat, compact and full.

Burleigh & Brother, Plainfield, Conn. Flower and vegetable seeds, and greenhouse plants.

Busch, Hollister & Carter, St. Paul, Minn, New comers, but evidently old hands.

Cole & Brother, Pella, Iowa, offer premiums of useful books and papers to those who purchase liberally.

Henry A. Dreer, 714 Chestnut St., Philadelphia, in one compact volume has seeds, flowers, fruits and implements.

James J. H. Gregory, Marblehead, Mass., has his usual specialties and novelties, and everything else. N. B.—Mr. Gregory introduced the Hubbard Squash.

Peter Henderson & Co., 35 Cortlandt St., N. Y., have a catalogue of "Everything in the Garden." It seems to offer everything save the most important—brains.

Hovey & Co., 35 N. Market St., Boston, Mass. This old house keeps pace with the youngest.

Hovey & Company, Chicago, Illinois. Vegetable and flower seeds, and implements, and very full.

A. Howard & Co., Pontoosuc and Dallas City, Ill., send their 10th annual list.

Geo. W. Park, Mt. Vernon, O. Flower and vegetable seeds, bulbs, and window plants.

Wm. Rennie, Toronto, Canada. Vegetable and flower seeds, especially full in grains. A creditable catalogue.

Wm. H. Spooner, Boston, Mass. As compact, neat and full as heretofore.

J. M. Thorburn & Co., No. 15 John St., N Y. Their flower seed list uniform with that of vegetable seeds, with novelties, and a separate catalogue of Gladiolus and other spring bulbs.

Tillinghast Brothers, La Plume, Luzerne Co., Pa. Select vegetables and new potatoes.

Vanderbilt Brothers, No. 23 Fulton St., N. Y., have their usual condensed business-like catalogue.

E. Wyman, Rockford, Ill. Flower seeds and bulbs.

Washburn & Co., 100 Tremont St., Boston Mass., offer to purchasers of their seeds to the amount of $1 and upwards, selections from Prang's choice chromos.

FLORISTS.

Wm. A. Harkett, Dubuque, Iowa. A general collection with some novelties of his own.

Peter Henderson, 35 Cortlandt St. N. Y. Besides the standard sorts, an unusual number of novelties.

Hoopes Brother & Thomas, Westchester, Pa. The Greenhouse Department of this establishment is very full of choice novelties.

Long Brothers, Buffalo, N. Y., add to their catalogue a useful talk on "Common Sense in Horticulture."

Pray's Greenhouses, Central Falls, R. I., offer general stock, with specialties in the way of Pansies.

George Such, South Amboy, N. J. A list of choice Gladiolus, and numerous other seasonable things.

W. B. Woodruff, Westfield, N. J. Green-house, bedding and vegetable plants.

NURSERYMEN.

John Butterton, Hammonton, N. J. Fruit and ornamental trees, and shrubs, and hedge plants.

Lapham & Anthony, Clayton, Del., call theirs the "Dollar Nursery," as they offer small fruits in convenient dollar collections.

Henry S. Rupp, Shiremanstown, Pa. A tree catalogue, and another of roses and other ornamental plants.

H. M. Thompson & Son, St. Francis, Wis. Evergreen and other forest trees and tree seeds; very full.

T. C. Thurlow, Newburyport, Mass. Fruit and ornamental trees, especially evergreens.

J. A. Vaughan, Carver, Mass. Trees and shrubs, with cranberries as a specialty.

D. E. Hoxie, Northampton, Mass. Small fruits and seed potatoes.

IMPLEMENTS, FERTILIZERS, Etc.

W. H. Bowker & Co., 43 Chatham St., Boston Mass. The "Stockbridge" and other fertilizers, chemicals, etc.

Giant Powder Co., 61 Park Place, N. Y. Price List and methods of using Dynamite.

Quinnepiac Fertilizer Co., New Haven, Conn. Fish guano, scrap, German Potash Salts and other fertilizers.

The Dayton, (Ohio) Machine Company. Sulky rakes; cultivators, folding harrows, blacksmith's drills, and the Giant Tire and Band Bender.

Wing & Evans, 38 Platt St. N. Y., make the Manhattan Blood Guano.

POULTRY.

Wm. B. Wonderly, Dayton, Ohio. Light Brahmas, B. B. R. game bantams, the smallest bantam known, etc.

EUROPEAN CATALOGUES.

William Thompson, Ipswich, Eng. As usual his catalogue stands at the head for botanical accuracy in flower seeds, to which it is wholly devoted.

Anthony Waterer, Knap Hill Nursery, Woking, Surrey, England. Rhododendrons are the leading feature, but many other choice evergreens, deciduous shrubs and trees are offered.

Bee Notes for March.

BY L. C. ROOT, MOHAWK, N. Y.

This is a most trying month for bee-keeping as ordinarily conducted. Bees having been so long confined to their winter quarters, are now very sensitive to the least jar. In these northern latitudes leave them entirely undisturbed. Up to this date bees have left their hives and fallen upon the floor of the room much less than usual.

Shade for Hives.

I notice that some advise evergreens for shade, but I consider them objectionable. There are times when I deem the direct rays of the sun upon the hives to be invaluable. It would be better to use trees that are not covered with leaves in early spring, or late in the fall. In my experience, even a shade tree of this kind, taking its effect as a whole, is detrimental rather than otherwise, except when the hives are shaded only during the middle of the day. Having given the matter much attention, I think good roofs are preferable. These may be removed at any time, and thus give the hive the full benefit of the sun's rays when desired.

The swarms which were weighed the 1st of Jan., and weight reported, consumed 2 pounds each during Jan'y.

Questions and Answers.

Direction of Combs.—"Should combs in boxes be built parallel, or at right angles to the brood combs?"—It really makes no difference. In the new Quinby Hive we have them built at right angles on top and sides.

Lumber for Hives.—"Will ½-inch lumber be as good as thicker for hives, provided it be well painted, and set in a shady place?"—It should be ⅞-inch thick....See remarks above on shade.

Side Boxes.—"In using side storing boxes, is it essential to have them on both sides of the brood combs?"—No. I box as many on top and one side, as on both sides.

How do Bees Enter Side Boxes?—"From the ends, or from slots below?"—From the end. If two-comb boxes are used, cut the glass narrow enough to leave a passage on each side, gluing it into place at top and bottom. See figure 1.

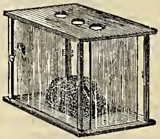

Fig. 1.—BOX.

How many Combs?—Are six combs (Langstroth) enough to be left on the hives, during winter, if left on the summer stand, and packed with chaff at the sides and top?"—If the large, modified form of Langstroth frame is meant, such as Mr. Quinby once used, six would be sufficient, but if the shallow frame is referred to—7 or 8 should be used. The same number as above should be used when boxing.

Feeding Bees.—"Is dry sugar, or candy, as good as syrup to feed in spring to stimulate breeding?"—Not nearly so good. I prefer that the syrup should be quite thin. Water is as essential as sugar for brood-rearing. Do not stimulate brood-rearing too early in spring. Under no circumstances should they be disturbed for this purpose while in winter quarters.

Holding the Frames Together.—"Should I use a rubber cord to hold the frames of the new Quinby Hive together?"—I use ordinary hop twine.

Hook for Frames.—"Will you describe the hook for holding frames in position?"—It is made of ⅞-inch hoop iron. Cut a piece 2½ in. long, bend it at right angles ⅜ in. from one end. Punch two holes in the other end to admit clout nails to hold it in place.

Fastening the Frames.—"Does the hoop iron that the frames hook on to project over the end of the bottom board?"—No. A groove should be cut in the bottom board, ⅛ in. deep, over which the hoop iron should project, leaving ⅞ in. back of the frame for the back of the hive to rest upon. See figure 2.

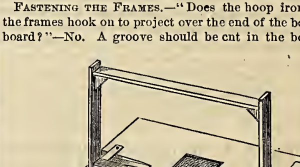

Fig. 2.—BOTTOM BOARD AND FRAME.

Ventilation.—"Should there be a hole in the bottom board for ventilation?"—I consider it very important that every hive, of whatever kind, should be provided with a large ventilator, directly under the combs, covered with wire-cloth, with a slide so arranged that it may be opened a little or much as may be desired.

Correction.—In Feb. Bee Notes, I am made to say, "with a space between each pair of frames," when it should be, "with spaces between the frames."

Science Applied to Farming.—XXVII.

What Fertilizers to Use.—Farmers their own Experimenters.

> "These experiments, it is true, are not easy; still they are within the power of every thinking husbandman. He who accomplishes but one, of however limited application, and takes care to report it faithfully, advances the science, and, consequently, the practice of agriculture, and acquires thereby a right to the gratitude of his fellows, and of those who come after. To make many such is beyond the power of most individuals, and cannot, therefore, be expected. The first care of all societies formed for the improvement of our science, should be to prepare the forms of such experiments, and to distribute the execution of these among their members."
>
> ALBRECHT THAER, *Principles of Rational Agriculture.*

"I have a piece of old land that has been somewhat worn down by a number of years cropping. It is such and such a kind of soil, has been treated so and so, and I want to get such a crop, and at the same time bring it into good condition. My supply of stable manure is short. Will it pay for me to try guano, or superphosphate, or potash salts? If so, how much shall I use?"

This is a type of a great many inquiries I receive. I wish I could answer them, but I most certainly can not. Chemists can not prescribe for soils as doctors do for patients. It would of course be very easy to take the analysis of a given crop, and say, "this requires so many pounds of nitrogen, so many pounds of phosphoric acid, lime, potash, and so on. These will be furnished by so much sulphate of ammonia, superphosphate, and sulphate of potash." But very likely the soil would supply enough potash of itself, and the sulphate of potash would not be needed. The crop may have the power of making use of the compounds of nitrogen already stored in the soil, or supplied by the atmosphere, so that at least part of the nitrogenous material will be superfluous; the application of gypsum is often an equivalent to the addition of potash and magnesia, since gypsum tends to liberate these from their combinations in the soil, and thus render them available to plants. So likewise lime may often be applied instead of the guano or phosphates, with good results, and at but a fraction of the cost. The physical conditions of the soil may be such as to very materially affect for good or ill the action of the fertilizers, and thus the formula, fine as it would appear in theory, will be apt to be far from economical in fact.

Stable manure is a complete fertilizer. It contains all the ingredients of plant-food, and its organic matter improves the mechanical condition of the soil besides. It is a standard fertilizer, and useful everywhere. To learn by what artificial fertilizers this can best be supplemented, in any given case, is, as I have often insisted, a matter best settled by experience and experiment.

For farmers who have not their own experience, or that of others in like circumstances, to guide them, the most sensible plan is to try experiments on a small scale, with different trustworthy fertilizers of high grade. The ones that prove most satisfactory, can then be used in large quantities with confidence.

This idea is by no means original with me. I suppose that if any one versed in these matters were to mention the men generally conceded to be the leading authorities in agricultural chemistry at the present time, the first names would be, in Germany, Wolff, Stoeckhardt and Knop; in France, Boussingault and Ville; in England, Voelcker, and, in this country, Johnson. Now every one of these, except Boussingault, in whose works I do not recollect to have seen anything of the sort, not only recommends such experiments, but has given more or less specific directions for them. In a little book on fertilizers by Wolff, which I have at hand, no less than seven pages are devoted to plans for farm experiments with special fertilizers.

Prof. Johnson says: "This method consists in observing the effects of each element of plant-food, or of each available fertilizer, applied by itself to a plot of suitably prepared ground, upon a crop or a succession of crops. For many ordinary purposes plots of small area—a square rod each—are sufficient, if the soil is uniform in quality and depth over a considerable surface, as shown by the uniform stand of the crops in former years. It is better, however, to have a long and narrow plot of ten or fifteen square rods area, because the inequalties of the soil are less likely to disturb the results. The ground being prepared for a crop, a number of the measured plots or strips are laid off, and different fertilizing matters are applied to them in appropriate quantities. On one, for example, use gypsum, on another fresh slacked lime, on another superphosphate, made from bone ash or bone black, and oil of vitriol; on another pulverized "blood and meat scrap," rich in nitrogen, but nearly free from phosphates; on another sulphate of ammonia, on a sixth muriate of potash, on a seventh a nitrogenous phosphate, or a fish guano, on an eighth stable manure, etc. Two or three plots with no manure should intervene, to make a basis for comparison. The experiments should extend over a series of three or four years, the same plots being each year treated with the same kinds and qualities of fertilizers, but cultivated with different crops.

Some time ago a farmer was telling me of a case quite in point here. A farm near his own, which had been cropped until it was pretty well run down, came into the possession of a well to do gentleman, who had noticed a good deal of the working of commercial fertilizers, and made up his mind that he could bring the old farm back into good condition by a liberal use of these articles. So the first season after he took hold of it, he applied some four or five hundred dollars worth of phosphates and guano. The effect was perceptible, but not very satisfactory. The next year this was repeated, but with scarcely any return. Now, comparing the soil and management in this case, as described, with some other cases which I have known, I am strongly inclined to suspect—of course, there is no certainty about the matter—that the soil was deficient in available potash, which the guano and superphosphates almost entirely failed to supply. Their stimulating action enabled it to furnish a little of the other needful materials, but by this effort its already exhausted condition was made still weaker, and it could bear but little more. If such were the case, then a proper application of potash salts in the place of part, at least, of the guano and phosphates, would probably have turned the result the other way, and given a profitable yield.

If, instead of making such investments in fertilizers, of the good effect of which he was by no means assured, the proprietor of that farm had spent, say ten dollars, in different kinds of fertilizing materials, as above suggested, and a few dollars more in experimenting with them, and had added a moderate amount of thought and trouble to make the experiments accurate, and had thus learned what materials would bring profitable results, would it not have been money in his pocket? And would not the knowledge thus gained have been worth something too, on its own account, for himself and others to whom it might have been communicated?

At the late meeting of our State Board of Agriculture, some experiments, such as have been spoken of, conducted last season on a farm near our Experiment Station, were reported. The results were quite interesting. Some small bags of fertilizers, put up for the purpose—containing different fertilizing materials, the set of six or eight to cost some four or five dollars, were exhibited at the meeting. No less than thirty of these sets were requested by the farmers present, who desired to try experiments with them the coming season. Since then a number more have been requested, and the idea seems to be exciting a good deal of interest. It is possible that some of the readers of these articles may be inclined to study their soils and the effects of fertilizers on their crops in this way. I will give, next month, directions for obtaining the materials, and making the experiments.

W. O. ATWATER.

Ogden Farm Papers.—No. 85.

BY GEORGE E. WARING, JR.

A correspondent asks for a minute description of the box that we use for marketing our butter, and he offers to compensate me for private information on the subject. It will cost him less than any fee I should charge, to subscribe for the *American Agriculturist* for several years back. In June, 1870, I gave a full description with ample illustrations, of the whole concern.*

The Report read at the recent annual meeting of the Onondaga Dairymen's Association, shows a success in a direction that is open to general adoption in the neighborhood of all towns, large or small, where farmers deliver their milk to private customers. The full history of the Association is not given, but I infer from the report that the dairy farmers in the neighborhood of Syracuse, and perhaps within reach of it by rail, have combined to systematize and cheapen the delivery of milk to their customers. The Association produced nearly 3,000,000 quarts of milk, and bought over 60,000 quarts in addition. The sales on the street not consuming the whole quantity, what was not so sold was manufactured into about 23 tons of cheese and seven tons of butter, while between 3,000 and 4,000 quarts of cream were sold to private families or confectioners. The Association runs 20 delivery wagons, which cover 38 original milk routes. The systematizing of the labor, and the greater economy of running a full wagon, which supplies the whole of its route, over the old farmers' system of peddling milk—three or four wagons sometimes delivering in the same street—have resulted in a great saving of expense, to say nothing of the very important item, which it is difficult to estimate in dollars and cents, that the farmer, instead of being compelled to leave home for a number of the best hours of every day, to go peddling milk about the streets, is enabled to stay at home and manage his own work, instead of entrusting it to his hired men. Obviously, it costs less to transport 500 quarts of milk with one horse and wagon, and to distribute it by the labor of one man, than to have the same work done by three or four men and teams. While a skillful and trained milkman will do the same amount of work more economically than will the average farmer, who has much else to attend to. The nominal returns that come to the small farmer from the retailing of milk, are subject to more drawbacks than the realizes. Horse-shoeing, harness-mending, repairs and replacing of wagons and cans, are all items which as his account are usually kept, fail to get "added up," but any one who will keep a careful account of these out-goes, for two or three years together, will find their yearly average is a very serious drawback on the aggregate returns. Where ten or a dozen cows are kept, it would often be better to sell the milk at the farm for one-half its retail price, than to peddle it out. It is only near very large towns that any such extent of business can be done, as at Syracuse, but there are thousands of smaller towns all over the country, where an association of farmers, with an arrangement by which some one from each neighborhood should carry the whole product to a central station, from which the retail wagon or wagons should start, would effect a saving that would make an important item at the end of the year.

"My soil is stiff, yellow clay, with close, hard sub-soil. After under-draining my land, would it be advantageous to use a sub-soiler, considering cost of plow and labor—and, again, will it pay to sub-soil clay land that is not under-drained?"—The last question can be very decidedly answered in the negative; concerning the first I can not say that I am disposed to recommend the process. Theoretically it is advisable. Practically, very few do it. I do not do it myself, nor have I for many years. It would not exactly be true that it was given up in my case, or that it is neglected in the case of others, because it has been proved, or it is believed, not to pay. I confess that we have found it at Ogden Farm too much *bother*, using half the team force at a time when it was all demanded to prepare land for crops as rapidly as possible. I have been too ardent an advocate of sub-soiling in my earlier days, to give it an entirely cold shoulder now, and if I were buying a farm, I should give a preference, and a higher price, for one that has been thoroughly sub-soiled year after year, supposing such a one to exist. But I should not pay enough more to cover an important part of the cost of the work, and it is by no means clear that the cost would have been returned in the extra crops for the hope of which the work was done.

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* [The Publishers can always supply any back numbers desired for 21 years past. Price 15c. each, post-paid.—ED.]

This much may be stated with confidence, that where the sub-soil is a heavy, compact clay, many of the advantages that result from sub-soiling, will be produced by under-draining, and they will increase, year after year, by reason of the deeper penetration of roots, that the withdrawal of subsoil water allows—clover roots especially. The deepening of the feeding area may be secured in this way more rapidly, more certainly, and more economically, than in any other.

I am asked by frequent letters to describe the Bullard Churn. The answer must be similar to that concerning the butter box. It was described and illustrated several years ago in these pages, and my recent references to it have been only in confirmation of the good opinion then expressed. It would not be fair to the mass of old readers, to repeat what they are already familiar with, and to which they can at any time refer in their files of back numbers. I will say, briefly, that this churn is a long box, with no dasher or paddle of any kind. It is arranged to oscillate endwise, causing the cream to be thrown, with a swash and a swirl, from end to end; it is easy to work, and easy to be kept clean, and is generally a sensible and useful implement of the dairy. Its great recommendation in my mind is, that its sides are kept washed down, leaving no accumulation of half-churned cream to get mixed with the butter, and render it streaked and rancid. [See *American Agriculturist* for August, 1873, p. 296. See previous foot note.*—Ed.]

The revival of interest in dairy matters is indicated by requests for information, which I receive with almost every mail. As my correspondence is already a great tax on my time, I trust I shall be excused for the suggestion that all I have to say, has been said in the Ogden Farm Papers in the *American Agriculturist*, since the beginning of 1868, and that, if it is of any practical worth to my questioners, it is worth what it would cost to buy a set of back numbers. I say this in no ungracious spirit, but I have not time to explain to individuals, what I have already written for publication.

I have just received a letter on the subject of "black switches" in Jersey cattle, which the writer thinks constitutes an important objection to them at the South. A cow having this ornament in great perfection was recently driven home minus the lower half of her tail. The temptation for a black switch for her chignon had been too much for some colored belle, and my informant has resolved to eschew henceforth any color of cow-tail, which can so lead the dusky maidens of his neighborhood to disregard the recognized laws of property.

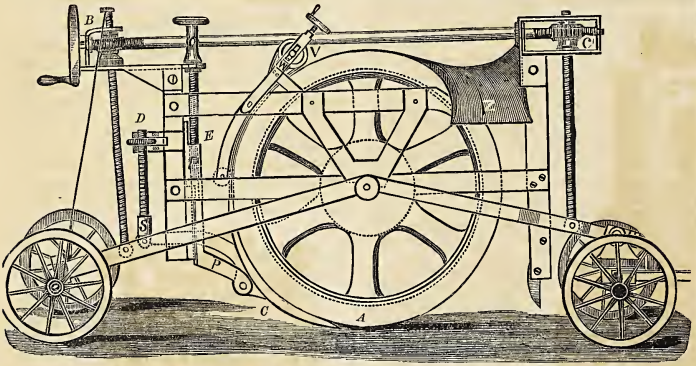
W. H. H., of Niagara Co., N. Y., has a grain and fruit farm, but keeps three cows. For some years he has sold his butter to a dealer in Lockport, who pays for it a cent or two above the highest market quotation. Warm weather makes trouble. Last summer several churnings were quite lost, and some others were deficient, although the cream was hung in the well, and the churning was done in the early morning. The milk would be thick, and the curd would begin to separate in 24 hours. He has no spring, and can not afford a windmill pump, but has a well of cold water under the floor of an enclosed stoop, at the side of the house. This floor is somewhat raised from the ground, and rests on a stone wall all around. He proposes to make a tank under this floor at the side of the wall, to be reached by a trap-door from above, and filled from the pump, letting the water run back into the well, and re-filling the tank two or three times a day.

I think this plan would work very well, save that if the water is used for domestic purposes, it would be better when the tank is emptied, to let its water run to waste. The tank must not be much larger than needed to hold the cans, because of the amount of pumping this would require, nor must there be so little water that the animal heat of the milk would raise its temperature above about 55°. Some means would have to be taken to prevent the dust from the floor from falling on to the milk. If ice is to be had in moderate quantity, this seems decidedly a case for Hardin's Refrigerator. The best cans are those make by the Iron-clad Can Co., of New York, 20 inches high, and 8 inches in diameter, costing $1.75 each. The form of butter-mold used by us, was illustrated in the *American Agriculturist*, for June, 1870. These molds may be made by any wood-carver, those made here in Newport are quite costly. Makers should advertise them.

* * *

Randolph's Ditcher and Excavator.

The brief note in November last, referring to the Ditcher invented by Ex-Governor, now Senator, Theodore Randolph, of N. J., brought so many inquiries, that we here present an engraving of the machine. The Senator, being largely engaged in ditching and draining on his own farm, became convinced that the work could be done both better and more cheaply by a machine. This was an unfortunate idea for him, perhaps, as it involved him in the trials and disappointments that seem to be the lot of all inventors. In looking at the machine as now made, and of which we give an engraving, the first thing that strikes one is its great simplicity, there being nothing complicated about it, and nothing that is not understood at a glance. Yet this simplicity of structure was only reached after many trials, at least 15 or 20 machines having been built before anything like a fair success was attained; an unforeseen obstacle would require some modification, always in the direction of simplifying the parts, until several years, and a sum that many would regard as an ample fortune, have been consumed in bringing the ditcher to its present condition. For example: the machine that a few years ago weighed 4,000 lbs., now weighs but 1,600 lbs., and is not only lighter, but more effective and stronger than before. The principal and most important part of the machine is the ditching-wheel, *A*, made very strong, and furnished with two steel cutting flanges; the dotted line indicates the depth of these flanges, which are from 3 to 12 or more inches apart, according to the size of the machine. The width of the wheel, and the distance between the flanges, determine the width of the cut, while the depth of the cut is governed by that of the flanges. This cutting-wheel is mounted on a frame-work, supported by four low wheels, which allow the machine to be transported from place to place. The ditching-wheel is so supported, that it may be raised or lowered by turning the wheel at *B*. At *C* is a plow, a broad, strong plate of steel with a sharp edge below; this may be set with its point more or less within the flanges of the ditching-wheel, or placed in any desired position in reference to them, by means of the screws *D*, *E*. An endless belt of vulcanized rubber, passes over the wheel at *V*, and over a smaller one shown below in dotted lines, and may be made tight or loose by the screw seen above *V*. The working of the machine, after the plow *C* is adjusted, is governed by one man, who stands on a platform between the hind wheels, but is not shown in the side elevation. By turning the wheel *B*, the ditching wheel is lowered, by the action of the large screws seen at each end; the flanges cut into the soil, and as the machine passes forward, the slice is lifted by the action of the plow *C*, and carried upward; when it passes by the upper end of the plow, the earth is held in place by means of the rubber belt, and when it reaches the slide or shoot, *Z*, a saddle-shaped piece of boiler-plate, it leaves the channel between the flanges of the ditching-wheel, and is discharged at each side of the ditch. The discharge may be made all at one side, if desired, or if necessary, the machine may be so modified as to discharge into a wagon. Of course the machine goes over the ground several times in succession, until the desired depth is reached. After the first cut is made, the machine is lowered until its whole weight rests on the ditching-wheel, the only use of the four wheels being to steady it; it is claimed that the work is done faster, and is more satisfactory, as it goes towards the bottom of the ditch. The machines are made to work with two, four, or six or eight horses, or by steam power, and cut from 3 to 24 inches wide, and 26 to 40 inches deep.



THE "FARMER'S DITCHER."—MADE BY RANDOLPH BROS.

The four-horse machines are regarded as the most suitable for ordinary work, one of which would do all the ditching required in a neighborhood, though the two-horse machine will answer for tile-draining. It is claimed that with four horses and two men, a machine will cut a drain 3 feet deep and 4,000 feet long in a day, an amount of work which, if done by hand, would require 50 men. Of course large roots or stones, which would prove an obstacle to ditching by hand, will prevent digging by the machine; when an obstruction is met with, a turn of the screw will relieve the machine, and when this is passed, another turn sets it at work again. We went to the field where this machine was to be tested in presence of the Centennial Jurors, but the loss of a nut in the running gear in transporting it from Agricultural Hall to the trial grounds, caused a delay, and we were unable to wait until the defect could be remedied. We the same evening met one of the Jurors, who informed us that the machine performed in a most satisfactory manner, and we have similar testimony from others. The Company offer most satisfactory guarantees as to the working capacity of their different machines.

Steam Engines for the Farm, Cheese-factory, and Workshop.

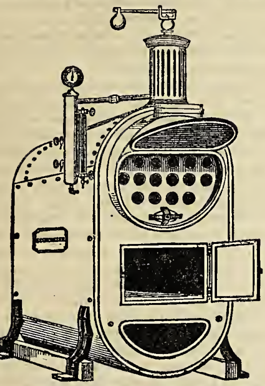


Fig. 1.—"ECONOMIZER" BOILER WITHOUT ENGINE.

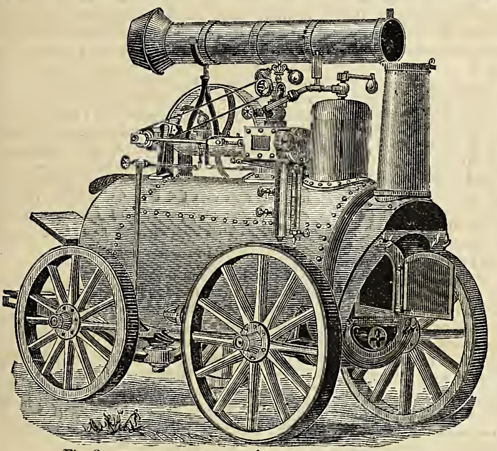


Fig. 3.—WHITMAN & BURRELL'S AGRICULTURAL ENGINE.

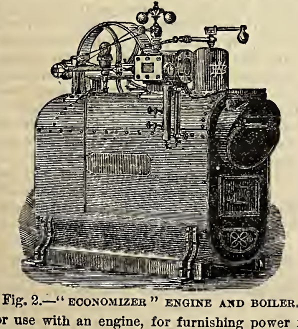


Fig. 2.—"ECONOMIZER" ENGINE AND BOILER.

We have previously described a few of the popular portable engines which are more especially adapted to the light uses of farms, cheese-factories, and workshops. We now add to the list some which offer at least equal advantages, and some which are especially designed for certain uses. For instance, the "Economizer" boiler, shown at figure 1, is made expressly for use in cheese-factories and on farms, for steaming feed as well as for use with an engine, for furnishing power for any purpose where that of 2¼ up to 8 horses may be required. This boiler received the highest award of the Committee on Boilers and Engines, at the American Dairymen's Convention, at which several others were exhibited. This boiler is carefully made of heavy boiler iron, has no mason work, is ready for use when received from the manufactory, and is easily portable. It is shown in the engraving, (figure 1), with the lid over the flues open. The flues are seen to be easily accessible. The fire is built in front, and passes along the bottom of and around the boiler to the back, where the flame strikes the water-back, and returns through the flues, which are covered with water, to the smoke-pipe. Either coal or wood may be burned under the boiler. This peculiar arrangement secures the greatest economy of fuel, whence the appellation of this boiler. At figure 2 is shown the Economizer boiler with engine. This machine of 8-horse-power, may be run at a cost of 40 cents a day for fuel. It is now in use in sixteen States, and in Canada. The cost of boiler and engine complete, is from $275 for 2¼-horse power, up to $575 for 8-horse-power. A larger machine, known as the "Economizer Improved," from 5 to 18 horse-power, is also made, having a water-back attachment, and an arrangement by which the deposit of scale from the hardest water is prevented. Figure 3 represents an "Agricultural Engine," designed for farm work, being easily moved from place to place, for thrashing, sawing, and other work. It is the only return-flue boiler and engine made for farm work. An 8-horse-power engine costs $800, or but $100 per horse-power. Many of these engines are in use for thrashing in California. The manufacturers of these boilers and engines are Messrs. Whitman & Burrell, of Little Falls, Herkimer Co., N. Y. In addition to this branch of their business, these parties are extensive manufacturers of dairymen's supplies and machines, and of all sorts of appliances for cheese-factories and creameries. At figure 4 is shown a small portable engine and boiler, used for a large variety of light work, such as ginning cotton, sawing, grinding, pumping, etc. This is an upright tubular boiler, which occupies but a very small space, and is very simple and easily managed. It is known as the Bookwalter Engine, and is made by James Leffel & Co., of Springfield, Ohio.

The Bigelow Semi-portable Vertical Engine, made by H. B. Bigelow & Co., New Haven, Ct., is shown at figure 5. This engine is made of different sizes, from 6 up to 20 horse-power, costing from $430 to $980. The same parties manufacture a portable engine on wheels for farm work.

The use of steam is rapidly extending through every branch of industry. So far, there has been less use made of it upon the farm, than might have been expected, and, as we believe, might have been made profitable. It is clear that, to a great extent, agriculture could be made more profitable by the investment of more capital in its operation. It is those who are able or willing to use all the labor-saving and economical appliances, which they can turn to advantage, that are making the most money from farming, or in fact from any mechanical employment. Thus we find a farmer, who employs gang-plows, drills, and rapid seeders to sow his crops upon hundreds or thousands of acres, and steam engines to thrash and clean his harvest, sometimes makes profits each year equal to the first cost of his land and machinery. This has been done of late years in Minnesota, Kansas, and to a very large extent in California. Without the capital to do this, of course, it could not have been possible, neither could it have been done with the money, unless the machinery had been procurable. The fact is, that the possibility of using all the mechanical aids in agricultural industry, that are now at work in the field, the barn, the elevator, the dairy, and the cheese-factory, has attracted an immense amount of money to the business of cultivating of the soil, feeding and raising stock, and manufacturing the raw products of the farm into articles of merchandise, for home use and export. That this adaptation of steam-power to the uses of agriculture is bound to be largely extended, we do not doubt, and to learn how to run a steam-engine, will soon be as necessary a part of the education of a farmer, as to learn how to sow crops or rear stock. This is a part of the practical education of a young farmer, who desires to be accomplished in his business, that should enter into the course of instruction at Agricultural Colleges, and should in no wise be neglected, for he cannot tell how soon he may be called upon to put his knowledge into practice.

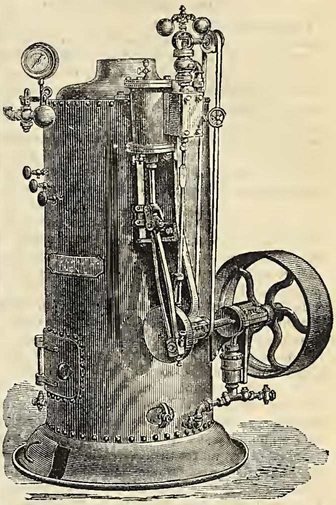


Fig. 4.—THE BOOKWALTER ENGINE.

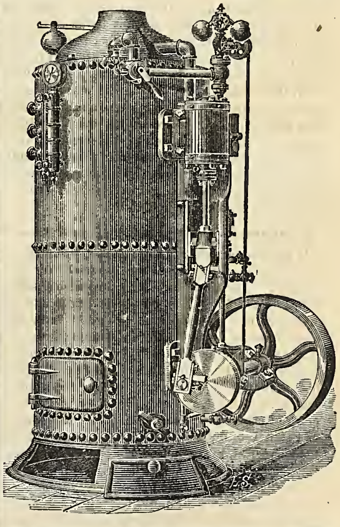


Fig. 5.—BIGELOW SEMI-PORTABLE VERTICAL ENGINE.

Among the Farmers.—No. 14.

BY ONE OF THEM.

Small Farms and Small Farmers.

I live among small farmers, in fact, among the smallest kind of farmers. The farms are from 50 to 100 or 150 acres, and I find very little to learn among them, except perhaps a very low grade of "thrift," based upon very small, constant economies. The land is of all grades; some is just redeemed from the swamp and forest, other worn too nearly out to raise buckwheat, rye, and white beans. Market gardening is profitably conducted by a few, but it involves hired labor, and the fashion for two centuries has been to hire no labor, but to do only such work as farmer, his sons, and one or two male slaves could do. Now that the slaves are gone, there is less work done. There is a little money in bank, and there may be a few hundred dollars loaned here and there on mortgage, and this probably came from the sale of part of the old farm. So the "thrifty" natives are in no fear of want, and they and their children have no higher ambition than to live as comfortably as they do now. Some of the land is excellent, and almost all, with good management, is far more easily worked, and being nearer a good market, might yield greater money return than nine-tenths of the farms in New England. The city quickly absorbs all the more enterprising young men, while the rest wait for the shoes of their progenitors, or set up for themselves in a small way. Regarding the native farming community only, it is quietly sleeping "the sleep that knows no waking." You may "stick your finger in its eye and it will not wink." I am perhaps too sweeping. There is one thing most of the young men are wide awake about. That is

Trotting Horses.

It comes to pass in this way. A young man becomes a young man when he owns a horse and top buggy—he is nothing but a boy before that. It is easier to breed and break a colt than to buy one, though everybody says it costs more. So the old mare is bred to a trotting stallion, and the colt is expected to trot. The stout farm horses that were once bred here, that would work well on the farm, and make fair time on the road—haul thirty hundred weight of truck to market before breakfast, and do a day's work on the farm between noon and dark, have disappeared, and spindle-legged trotters have taken their places. On a fine Sunday afternoon the whole country is alive with smart buggies, trotting ponies, and young men, and the young men are not alone. There are blushes and ribbons about, and the youths often look interesting, and if you are approaching on the road, they are quite likely to forget to turn out. It's quite natural, and no wonder the boys are fond of horses. They do most of their courting behind them.

What Horses shall Small Farmers Breed?

It becomes a matter of interest to determine what horses it will pay best to breed, especially for small farmers. The land, as I have repeatedly said, is light. Fall plowing is but little done, and theoretically not advantageous. A good farm mare may therefore do her spring and summer work perfectly well, and have a foal every year in August or September. It seems a great pity that so many horses should be raised, and among them so few that are worth the hay and provender that they eat before they are five years old. Were the Norman, or Percheron, not so violent a cross, it would seem to be the best, nevertheless, I believe experience at the West shows that smallish mares will often have excellent and well formed foals by such sires. The first Percherons ever imported into this country were brought into New Jersey, (the Harris importation). After the importer had used them for some years, "Dilligence," the stallion, and "Joan," the mare, with other imported animals and their get, the entire stock, was sold out by Mr. Harris, to my neighbor, Mr. John G. Bell. He bred them for some years, and after the death of the old horse, bred old Joan to the imported thorough-bred stallion, "Consternation"—a horse of most amiable disposition for a thorough-bred. The cross proved a capital one, and a pair of mares thus bred are famous good ones. They are a handsome, stylish pair of farm horses, and trundle the family Rockaway about in good style, and at a remarkably good rate too. There are several stories told of

The Strength of these Percherons.

One is, that coming from the field one evening after plowing, having left the whiffletrees behind them, the plowman found a neighbor with a yoke of oxen and a pair of horses at the foot of the hill, with a log, which this team was unable to move. He was asked to attach his horses, so that the combined force might draw it up.—"Let me go back and get my whiffletrees," said he; "my mares will manage it alone."—"No, hitch right to these."— They were broken at the first pull. Then his own were obtained, and with the reins hung on the hames, the word was given to start up a little. As soon as the little mares felt there was really a weight behind them worthy an outlay of strength, they started and did not stop until they got to the top of the hill, distancing the entire crowd, the log rolling first this way and then that. I call them little, and they are, as they weigh only about 1,150 pounds each, but it is "all horse," and not a lazy nerve or fiber. Their hoofs are round and solid as iron; their legs short-jointed, flat, and hard, with tough tendons; they are short-coupled, low set, solid fleshed, and were originally grey, but now white.

There is a quick market in all our cities for such horses. We ought to raise them. Sending the geldings to the market and keeping the fillies for farm work and breeding. The young horses could be worked on the farm, and would pay for their keep after they are two years old, and the work would do them good, besides thoroughly breaking them without their knowing it.

The Great Normans,

such as the Western breeders have been importing so freely of late years, are too large for profitable use among Eastern farmers, or among small farmers anywhere, but if we could use the old style Percheron such as Mr. Harris brought out, it would be exactly what we want, as imparting weight, courage, power, soundness, quick growth, docility, good trotting action, and almost invariably a fast walk. I suppose such stallions may be imported for about $1,200, possibly for less—certainly for less than a second class trotting stallion is considered worth. As to Clydesdales, they are too heavy for our use, too expensive also, and need to be crossed upon heavy mares, or the progeny lack symmetry to a deplorable extent. I mention these—Normans, Percherons, Clydesdales—because next to trotters they seem to be the available horses. We have a good many in this country, and the foreign ones may be easily imported.

Really Good Carriage Horses,

could we breed them, would of course be much more profitable than draft horses, but we have no carriage stallions proper, and the carriage horses bred in the country come from large mares bred to thorough-bred or large trotting stallions, and if really fine, are lucky accidents as it were. The majority of the progeny being of inferior style, or lacking in some important quality. A New York merchant having a favorite mare, no longer of use in his carriage team, bred her twice to a rather famous imported thorough-bred. The result was one light limbed, heavy-bodied colt, so lacking in muscle and endurance, that he was worthless for any purposes for which he could use him, and another so light-limbed and small boned, that in his gambols he actually broke his leg in a pasture free from woodchuck holes, post holes, or any such temptation. Last year I bred the only breeding mare I have, to Col. Battell's Orloff, and really have great expectations. If thorough breeding be measured by the inheritance of valued qualities, the Orloffs are more thorough-bred than the "thorough-breds." The English have bred horses for the race-course, and they have produced from the most intelligent, loving, gentle, fast, and enduring breed in the world—the Arabian and its congeners—the fastest running horses the world has ever known, and among them many capable of carrying great weight in the race, hence possessing courage, endurance, bottom, and speed, and of course fine bony and muscular development for these purposes. But they exhibit rarely any beauty of style or action, and exceptionally only that power and grace which combine so admirably in a fine horse, and they oftener than not possess a disposition which renders it dangerous to approach or handle them, and impossible to trust them.

Taking the same Arabian blood as a basis, one hundred years ago Count Orloff inaugurated a system of breeding which is now producing legitimate fruits. The Orloff horses are very different from the Arabians, yet they possess all their intelligence, fearlessness, affection, trustiness, courage, and endurance, while they have been bred to possess extraordinary beauty of form, carriage, and action, with large size, a natural trotting gait of very considerable speed, and generally jet black color. If ten to twenty generations of breeding systematically, for these qualities, the success of which is demonstrated by the astonishing uniformity of the animals, is not thorough-breeding, I am very sure the English system is not worthy the name. True, Count Orloff and his successors at Chrenova, openly used cold-blooded mares of various breeds and qualities, whereon to cross the Arabian blood, while the English breeders have done just the same more or less, only they do not acknowledge it.

Seedling White Oaks.

I have frequently noticed that in the spring, just after the frost is out of the ground in the woods, great numbers of acorns under the oak, and particularly under the White Oak trees, had thrown out a radicle, and perhaps a little later developed leaves. From experiments made a year ago, I find that these sprouting acorns may be transferred to mellow, well shaded ground, where they will take root, and grow well. They grow slowly, forming a thick, fleshy, strong tap-root, and I doubt if those that survive mid-summer, could be easily moved in any considerable numbers. Seedling maples may be moved in autumn, and so may locusts, and no doubt, most other trees readily coming from seed, but with upland oaks I have failed. Now, however, I think I can secure of the White and Chestnut Oaks as many as I need for a row or two in my nursery.

Planting Timber.

We are losing our timber very fast. I have just heard that a contract has been entered into for the clearing of nearly 2,000 acres of land adjoining and almost surrounding my little farm. This brings the fact home to my own door. What will become of my never failing, bounteous, sparkling springs? —I can not tell. There is much land unfit for the culture of ordinary crops, which grows cedars and white birches now, and might no doubt wave with Scotch Larch or Yellow Locust in a few years. I hope we may see it.

How to Lead an Unbroken Heifer.

A few weeks ago I selected a beautiful heifer in a field with others, bought her for a friend, and directed where she should be delivered. She was sent by rail, and on arrival my friend's man took her in charge. She was a yearling, and not large at that. Before he could get her home, some six miles, she had nearly killed him. She had thrown herself down half a dozen times, thrown and dragged him no-telling how far. She had exhausted herself, obstinately lain down, willfully gotten up, when she had a mind to, scared horses and women, and made her trip generally memorable along a quiet country road. All because as a calf she had not been tied up and handled, fed salt perhaps, and led about a little quietly a few times, before starting her on her journey. It is almost criminal to sell an animal in such an unsafe condition.

Whenever it is any one's lot to lead such a creature, let him first handle and quiet it for some time by every gentle means in his power. He may stand with the right hand over its neck, patting it upon the shoulder and neck. He may give it a little salt, stroke its head and ears, scratch its poll between the horns, etc. Finally he may let it walk quietly forward slowly—checking or stopping it by the halter—or if led by a rope about the horns, this should be looped about its nose, so as to give better control. Then with a light switch in the right hand, still held over the shoulder, and the leading rope in the left, the animal may be started upon her journey. She must be let have her own way for a while, that is, she may stop, or go ahead, walk or run gently, and so guided, as to keep on the way all the time. After a while she may be touched a little with the switch, if she stops, or stops too long, and be pulled in, if she runs too much, but even with an unbroken wild thing, like the one mentioned above, there need be no serious difficulty in getting her along, if she be properly treated.

Talks on Farm Crops.—No. 1.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"Where are you going to plant potatoes this year," asked Charley, who is beginning to take quite an interest in the management of the farm.

"I had thought of planting about 4 acres on No. 1, where we had mangels last year; and 6 acres on No. 5, where we are going to plant corn."

No. 1 is in prime condition. It was manured last spring for mangels, and the hoeing and frequent cultivation between the rows, left it tolerably clean, and as mellow as a garden. It is good, strong land, and after the mangels were gathered last autumn, we plowed it with a three-horse plow, and I never saw land turn up better. The land is on a gentle slope, facing the south, and it would seem to be just the place to put in a crop of potatoes. But I have been recently studying the results of Mr. Lawes' experiments on beets, and have come to the conclusion that unless we can use some artificial manure for the potatoes, we can not expect a very large crop. The beets do not leave much manure where the potatoes can get hold of it. Instead of planting potatoes, it would be better to sow barley and seed down with clover. We might reasonably expect a good crop of barley, and a *great crop of clover* afterwards. And then, after the clover, especially if pastured, we might plant potatoes, with a fair prospect of getting a good crop.

"Well," said Charley, "No. 5 is a clover sod."

True, but unfortunately the land has not been manured for a dozen years—and I question if it has ever been manured since it was first cleared of the original forest, half a century ago. But I should not care much for that, provided the land had been thoroughly worked, so as to develop the latent plant-food in the soil. Had such been the case, we should have had a large crop of clover, and the roots of the clover, together with the droppings of the sheep, would have furnished a liberal supply of plant-food for the potatoes, and we might have a reasonable hope of getting a good crop.

One thing is certain, we can not get a great growth of potatoes, unless we have a rich surface soil. We can often get a big crop of clover when the surface soil is comparatively poor, provided the lower soil is rich from previous manuring, or from thorough cultivation. But this is not the case with potatoes. The surface soil must be rich in available plant-food. A clover sod turned under is a good foundation to work upon.

"Yes," said the Deacon, "a sod of any kind is good. It keeps the ground loose and moist, and the potatoes like to bury themselves in it. It is a real pleasure to strike a hook into a hill, and pull up a dozen smooth, good-sized potatoes out of the decayed or decaying sod."

The Deacon is right. But in order to secure such a pleasure, we must look well to all the conditions. We want first—land that is free from stagnant water. If the land needs draining, it is vain to expect a good crop. Second.—We want a fine, free, mellow soil. In saying this, I do not mean any special description of land. Good crops of potatoes *can* be grown on a great variety of soils, ranging from a black muck to a heavy clay loam, or a blowing sand. But in order to raise good crops of potatoes on clayey land, it is necessary to get it into a fine, mellow condition. Third.—We must plant early. And what is of still greater importance, we must keep the crop clean by thorough cultivation between the rows, and the occasional use of the hoe in drawing the soil around the growing plants, killing the weeds at the same time.

Manure for potatoes should be rich and well rotted. Horse or sheep manure that has been used as bedding for well-fed pigs, is excellent. If the manure is not rich—in other words, if the animals have not been well fed—you can make up the deficiency, by putting a tablespoonful of nitrate of soda to each hill of potatoes. This will go far toward making poor manure into rich manure, and instead of getting 100 bushels of potatoes per acre, you may expect 200 bushels.

"But suppose you do not use any manure," said the Deacon, "would nitrate of soda then do good?"—I think it would. For you must recollect that whether we draw manure on to the land or not, we never plant potatoes without manure of some kind.—"It is not one year in ten," said the Deacon, "that I manure my potatoes."—"You mean," said I, "that you do not draw out any manure from the barn-yard for your potatoes. But pasture your land, and the droppings of the animals furnish manure; and you turn under a sod, which rots and furnishes manure, and the slow decomposition of the soil itself furnishes manure.

Now in this case, as in the other, the manure is generally poor in quality. It is not rich enough, and as I said before, nitrate of soda, or any substance furnishing available nitrogen, will go far towards making it rich. And all we want is rich manure. I have a little doubt that if we drew out ten loads of common barn-yard manure to the acre on No. 5, and spread it on the sod and plowed it under carefully. Then rolled and harrowed thoroughly until we had three or four inches of mellow soil on top of the sod. Then mark it off in rows three feet apart each way. Then scatter a tablespoonful of pulverized and sifted nitrate of soda on the soil where the potatoes are to be planted—covering, say a square foot of soil. Then plant the potatoes, and cover with a hoe. Then, as soon as the potatoes begin to crack the soil, go over the field with a light harrow; or if this is not done, go through the rows with a cultivator as soon as the rows can be seen. Cultivate both ways, and go as near the plants as possible. Then in another week, go through them again, and follow with a hoe, and continue to cultivate as long as it can be done without disturbing the tubers. With some such treatment as this, I think we might reasonably expect a good growth of potatoes on No. 5. And even if it is plowed up without manure, and is then top-dressed with nitrate of soda, as in the other case, I should expect a good growth. The decaying sod will furnish a certain amount of poor manure, and the nitrate of soda will help to make it rich.

There may be some soils so poor that it would be necessary to apply potash and phosphoric acid. But I do not think it is necessary on my farm—or on any other where you have a good sod to turn under on light land.

"Why do you say on 'light land' any more than on heavy land," asked Charley.—"Because," said the Deacon, "the sod on the heavy land will not rot soon enough to do the potatoes much good; while on sandy land, if not plowed too deep, and the season is warm and moist, and the field is well cultivated, the sod will rot rapidly."

"That is it exactly," said I, "and this decomposing sod will furnish the potatoes with *all* the elements of plant-food, potash and phosphoric acid included, but as a rule it will not furnish nitrogen enough for a maximum crop of potatoes, and hence it is well to use some manure that will furnish it at the cheapest rate, and in the most available condition."

"You will not persuade many farmers," said the Deacon, "to adopt such a system."—"So much the better for those who do take pains to raise good crops," said I, though I am ashamed of the remark.

The Colorado beetle will compel us to manure better, and thus secure a greater growth of vines. We have to use just as much Paris green, and spend just as much labor in applying it, on an acre of potatoes yielding 75 bushels per acre, as on an acre yielding 150 to 200 bushels per acre, and it is more work to cultivate and keep the poor crop clean, than the good crop, and almost as much labor to dig and gather an acre of small potatoes, as an acre of large ones, and not half so pleasant.

Last year I planted 13 acres of potatoes of different varieties, including Early Rose, Early Vermont, Snowflake, Brownell's Beauty, Compton's Surprise, Genesee King, Jones No. 4, and Thorburn's Late Rose. And the Deacon in the adjoining field planted Peachblow, Peerless, and Late Rose. He had a fair crop of Late Rose, but the Peachblow and Peerless were hardly worth digging.

In my field the Late Rose gave the largest yield, but the Early Vermont, on the whole, was the most satisfactory crop. The potatoes were more uniform in size. We had three acres, yielding 126 bushels per acre. The Late Rose had not come to maturity, when the drouth and the second crop of bugs struck them, and consequently we had a great many small potatoes. Snowflake did tolerably well, but not as well as the Vermonts. But it is not worth while talking about the varieties that did well last year. It was an exceptionally bad season. As a rule, the only good potatoes we had were the earliest varieties—and this simply because they had nearly got their growth, before they were seriously injured by the drouth and the bugs. The Early Vermont, planted side by side with the Early Rose on the same day, came up earlier, and made a more vigorous growth. The plants were stronger, larger, and more robust. I do not attribute this wholly to the variety. The Early Rose has been grown on this farm for several years, without a change of seed. The Vermonts are comparatively new. Had we got Early Rose from a distance, instead of planting our home-grown seed, the plants might have been as vigorous as those of the Early Vermont.

"It is not clear to my mind," said the Doctor, "that a mere change of seed is so important. I know that the New Jersey potato-growers often send here for their seed, and we sometimes send to New Jersey for our seed; but I have never yet seen any positive evidence that anything is gained by it. And then," continued the Doctor, "one farmer thinks it very important to plant large potatoes, and another thinks small ones just as good—and the results of careful experiments are quoted to sustain both opinions."

"The thing is certain," said the Deacon, "we shall have to plant small potatoes this year. The spring of 1875 potatoes were scarce and high, and a great many small potatoes were planted—some not larger than marbles—and yet we never had such a great potato crop. The next spring potatoes were not worth marketing, and we planted the best and largest—and never had a worse crop. And so it is evident that the character of the season has more to do with the result, than the size of the seed."

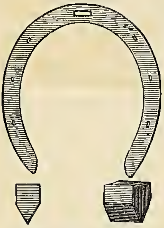
The best crop of potatoes I ever raised on this farm happened to be from small seed. But it was a bit of prime light land, in high condition. The root of the plant penetrated into the fine, mellow soil, and needed little nutriment from the seed.

Shall we plant in rows or in hills; shall we plant small seed or large; shall we cut the potatoes or plant whole; shall we cut the sets from the top or bottom, or middle of the potato; shall we cut the potatoes a few days before planting, and sprinkle lime on them; shall we plant one or two sets in a hill; shall we plant deep or shallow; shall we earth up, or shall we cultivate on the flat?

To all these, and a dozen other questions which are frequently asked, I answer: "Do as you have done, or change if you feel like it; but whatever else you do, or leave undone, make the land dry, rich, mellow, and clean. If you cannot do it this year, make up your mind to do it next year, and begin to prepare for it now. Farmers must look ahead. We must keep our land rich enough to grow a fair crop in an unfavorable season. We shall have high prices, and low prices, in the future as in the past—and the men who will make money by potatoes will be those who take the most pains to keep up and increase the fertility of their farms.

Movable Calks or Studs for Horseshoes.

An improved point, or calk, for horseshoes is shown in the accompanying engraving. This is an invention of a distinguished English army veterinary surgeon, and is not patented. It has many advantages over the calk in ordinary use. It is movable, and can be driven into the shoe and removed when needed. It is of hardened steel, and being used only when the roads are icy, and not upon bare ground, and never in the stable or yards, it does not wear fast, and can not injure the horses, or wear the stable-floor. It is made to fit a hole, half an inch long, and a quarter of an inch wide, punched in the toe of the shoe. The stud tapers slightly, so that, while it holds its place firmly when driven in, it may be removed by a few taps from a light hammer or a bolt. These studs may be used at the toes and heels, and a few spare ones, carried in the pocket when on a journey, will replace any that may be lost. The size should, of course, be made to suit the purpose for which they are used.


MOVABLE CALKS.

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.,

Loading Bags of Grain.—A very convenient plan for loading bags of grain into a wagon is shown in figure 1. This is applicable to barns or granaries, having basements. A hole 2½ feet in length, and 1½ foot wide, is cut in the floor, and is fitted with a hinged or loose door. A well-seasoned board, 17 inches wide, and 11 or 12 feet in length, having strips 9 feet in length, 1 inch thick, and 3 wide, nailed to the edge on the upper side, is hung at one end by a strap or piece of rope as shown. The lower end of the board should be even with the top of the wagon box; the upper end projects above the floor 2½ feet, at an angle of about 45 degrees. A wedge-shaped piece of wood is nailed under each side of the board, to prevent its slipping downward, and to hold it firmly. Bags of grain placed upon the board slide down into the wagon, and loose grain may also be scooped into this inclined trough, and find its way into the wagon box by its own gravity. To prevent loose grain spilling out, or being scattered about the basement by careless shoveling, a hopper like that at figure 2, should be used. A small wooden tube, or 2 or 3 grain bags, with the bottom out, and sewed end to end, will make a good conductor, and may be readily changed to any part of the wagon to fill up evenly.

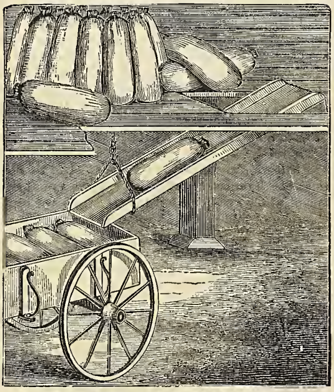


Fig. 1.—SLIDE FOR LOADING GRAIN.

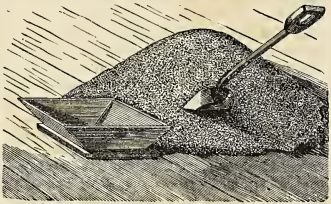


Fig. 2.—HOPPER FOR LOADING GRAIN.

An Artificial Duck Pond.—Ducks and geese may be raised successfully without any pond or stream; yet some prefer to give them an abundance of water, and such can make an artificial pond on the plan shown at figure 3. This is a wooden box, 10 inches deep and 4 feet square, or it may be 2 feet wide and 6 or 8 feet long. This is set in the ground, except the downhill side, which is partly exposed, and provided with a short spout placed within half-an-inch of the top, to carry off superfluous water. A peg is inserted at the bottom for drawing off the water when desired. Water may be conducted to the box by a pipe from a spring, underdrain, small brook, or from the well, by sinking a half barrel between the pump and pond, and filling it with water every day or two, and so graduating the flow that it will merely drop from the barrel through the pipe into the wooden box. In summer, ducks and geese should have a yard fenced off for their pasture lot, and not be allowed about the house nor the out-buildings, for when out of place they are very disagreeable.

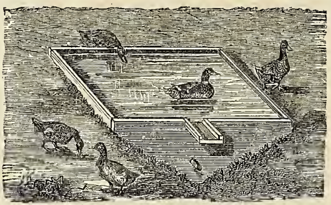


Fig. 3.—ARTIFICIAL DUCK POND.

Driving Fence Posts.—At figure 4 is shown an improved platform for use when driving fence posts. It is a large stool, with a top 2 or 3 feet square, nailed upon two 3 by 4 inch strips 2½ feet in length. Two inch holes are bored into the strips, and the legs are driven into them. The legs are 2½ inches square, and 2½ feet long. The forward ones are provided with wheels 6 inches in diameter. A step is nailed upon the top of the handles. With a sledge and crowbar on the top of the platform, the workman can grasp the handles and wheel it to any part of the farm, or quickly move it from post to post. When driving a post, if the top is chamfered or rounded off a little, it will not split in driving. A rammer like that in figure 5 is useful for packing the earth firmly about the post; this is a point that should in no case be overlooked.

Supports for Thills.—Herewith are shown two good thill supporters. That at figure 6 is the cheapest, and is portable. It consists of a pine stick, one by two inches square, and 3 feet in length, as shown in figure 7 on an enlarged scale. A cross-piece of the same size is bolted through the center and through the top of the upright. A sharp-pointed nail projects at the bottom one half inch. When this is not in use, it may be folded up, as indicated by dotted lines, and set in a corner out of the way. An excellent stationary holder is shown in use in figure 8. This is a round stick one inch in diameter and 3 feet in length. A cord is tied to the center and passes over a small pulley in the beam above; thence over another pulley at the side of the building; the end is attached to a weight. When not in use, the weight falls, raising the cross-bar to the point indicated by the dotted lines.

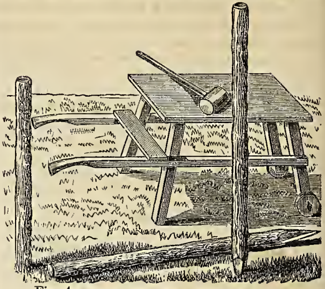


Fig. 4.—PLATFORM FOR DRIVING POSTS.

Standards or Pure Breeds.—The prevailing weakness for imported stock is doing a serious injury. Every fresh importation from England, of both sheep and pigs, shows year by year some variation from a former standard. This is especially noticeable in the late arrivals of Berkshire pigs, in which is implanted the short turned up nose of the Yorkshire, (excepting of course in color,) instead of the former handsome, straight, dished face and graceful head proper to the Berkshire. What is to become of the breed, if these innovations are encouraged? It is time that we stopped importing; we have excellent blood, and as good stock born in the country as can be imported; it is only because these novelties are brought over, that people desire them. Instead of breeders, we have dealers, who, to gain popularity, keep importing something new, as the foreign fashions change. It is to be noticed that a newly imported animal costs five times as much as an equally good native one, and this fact is an injury to, and an imputation against, our skillful native breeders. Here we insist on

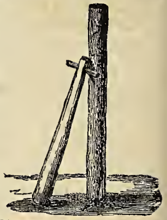


Fig.5. RAMMER FOR POSTS.

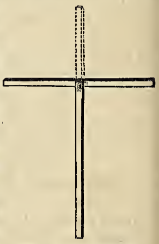


Fig. 7.—SUPPORT.

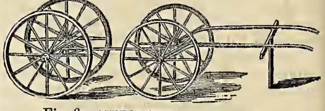


Fig. 6.—SUPPORTING WAGON THILLS.

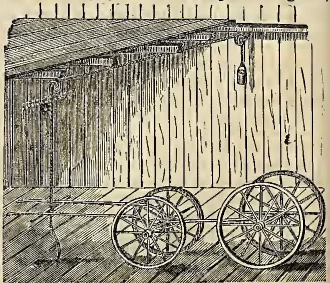
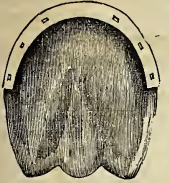


Fig. 8.—STATIONARY HOLDER FOR THILLS.

pedigrees, but we take from England anything that a breeder, who has a reputation, produces, without asking what cross he puts into it, or how his stock is made up. We ought now to establish American breeds, and before long we should be exporting animals back to England to improve their stock.

Tips in Place of Shoes for Horses' Feet.

In some sandy districts, especially in the South and West, shoes are not worn by the horses or mules during the summer months, while in other places, shoes are worn too much at that season, and evil results in either case. If unshod, the hoofs are either worn away at the toe, or become mis-shapen and break away, leaving a very bad foot for any after-shoeing. When the shoe is retained too long, the growth of the hoof is interfered with, and the sensitive inner parts of the foot are injured, and become diseased. If, on the other hand, the shoes are frequently removed and replaced, another evil occurs; the frog is either cut away at every shoeing, or is kept elevated above the shoe, and never permitted to touch the ground, and its natural use is never called into action. In either case, trouble may be avoided by using tips for the feet, like those shown in the engraving. These are made of light horseshoe bar, hammered out considerably, so that they are thin upon the inner edge and the ends. They are nailed to the toes in the manner shown, and protect them from wear, leaving the heels to come to the ground. The frog being untouched, retains its proper office as a cushion for the sole, and keeps the working parts of the foot in a sound condition. These tips may be kept in readiness for use, and may be easily nailed on to the foot by any owner of a horse, if he will take proper precaution to drive the nail in the right direction. They may also be left upon the foot for a longer time than the ordinary shoe without injury.


TIPS FOR HORSES.

Shaping and Boring Fence Posts.

The old-fashioned post and rail fence will probably never go out of use, so long as posts and rails can be procured. Its stability and durability commend it above all other fences, where the proper timber—which is chestnut—is to be found. This timber is of quick growth; when the tree is cut down the stump soon sends up sprouts, which in 8 or 10 years are large enough for posts and rails; the wood is soft, and easily worked into the required shape, and, when well seasoned, is very durable, provided the posts are set in the best manner. For this reason, an acre of chestnut timber should be planted upon every farm where it will thrive. As the duration of a well built and well protected chestnut post-and-rail fence may be counted as forty years, there may be five crops of rails cut off from a thrifty plantation during this period. Probably no other timber can do so well as this.

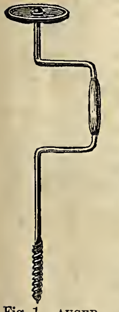


Fig. 1.—AUGER.

At this season, the work of preparing posts and rails is going on upon thousands of farms, while but very few of the farmers engaged in this work use the best methods. The posts are very roughly trimmed, and the mortises are chopped out with an ax. There is not only loss of time in this kind of work, but the fence when finished looks meanly, and will not be so durable as it ought to be. It is not considered, and perhaps not known to many, how much the value of a farm is increased by being well fenced. An attractive appearance adds thousands of dollars to the salable value of many well located farms, and if they are not for sale, it is still desirable that they should be made to appear at their true value. But the real value of a good, substantial, well built fence, is very much more than that of a poorly built one, and it is easy to spend as much time over a poor fence as over a good one. Some years ago we built a post-and-rail fence along each side of a road, running through the farm, and prepared the posts in the following manner. A boring table, shown in figure 2, was built of 4 x 4 scantling, and 7 feet long, which is the length of ordinary posts. The posts were trimmed upon the blocks shown in figure 3; the end was first squared to proper shape, (6 inches wide and 3 thick), and then wedged in the square-notched block. It was then dressed to a smooth finish, gradually increasing in width and thickness to the but, which we left rough, in order to take a firm hold of the ground. The holes were dug larger than usual, and were filled in around the post with stones, firmly rammed down. A hint was taken in this direction from an old fence upon the farm, which was said to have been in this manner set 40 years before, and of which the posts were still quite sound. The post, after having been trimmed, was placed upon the table upon its side, and resting against the rear posts, with the upper end touching the shoulder on the board beneath it. This brought it into the proper position to be bored. The boring guide, seen lying upon the ground in the engraving, was then placed against the post, and held by short wedge-shaped pieces of wood, resting against the front posts. The auger, fig. 1, made purposely for this work, was set in the hole of the guide, with the shank in the rest seen in the front. One hole after another was bored with great rapidity, many posts being placed, bored, and thrown off in less than three minutes for each one. Afterwards the wood between the holes was cut away with a broad mortising chisel and mallet. When the fence was put together, the holes and ends of the rails were painted with common tar. The cost of the whole, when finished, was about one dollar per rod, counting the rough posts at 15 cents, and the rails at 7 cents.

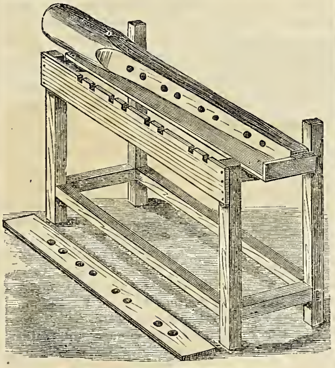


Fig. 2.—BORING TABLE FOR POSTS.

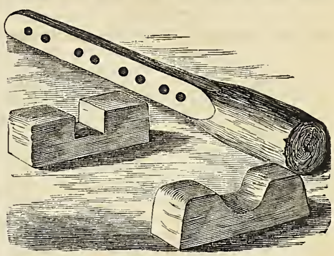


Fig. 3.—BLOCKS FOR SHAPING POSTS.

A Very Convenient Farm Pig Pen.

Herewith we give plans and a general view of a very complete and convenient farm pig-pen, recently built on the farm of Col. F. D. Curtis, of Charlton, Saratoga Co., N. Y. The building, shown complete at figures 1 and 2, is 48 feet long, 22 feet wide, and 12 feet high. There is an upper floor over the pens, which is used as a store-room for meal, corn, etc., and a cellar beneath them, used for storage of roots, and cooking and preparing food. There is a cistern in the cellar, into which the water from the roof is collected, and a pump by which the water may be run into the feed-kettle, or to the pens above. The arrangements are made with a view to the convenient handling and feeding of the stock, as well as to most perfect sanitary conditions. The building is warm enough to prevent freezing in the coldest winter weather, so that young pigs may be reared without difficulty, even at this season, if desired. The outer and inner walls, and the floor of the upper room, are all of matched boards; the floor of the pens is double, there being first a floor of hemlock boards, with matched joints, put together with hot pitch; the whole of this first floor is then thoroughly coated with hot coal tar, and a second floor of 1¼-inch hemlock plank, with matched joints, also filled with

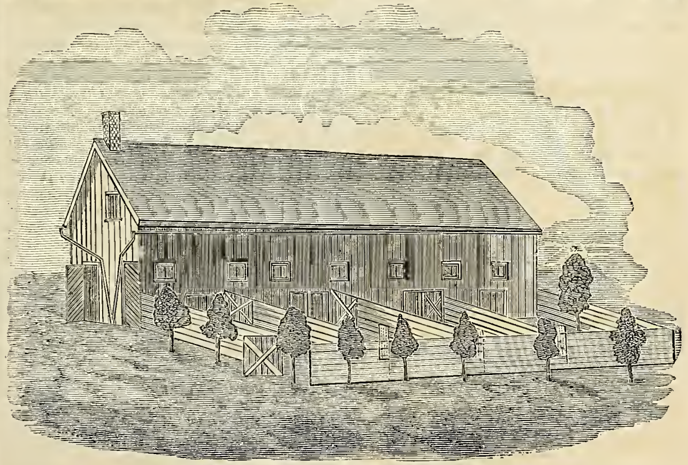


Fig. 1.—VIEW OF MR. CURTIS' PIGGERY.

tar, is finally laid down. This gives a floor that is not only very durable, clean, and wholesome, but it is perfectly water-proof, and prevents any drip of moisture into the cellar. The cellar floor is shown in figure 3. At *R*, *R*, are bins for roots, which are unloaded into them through the cellar windows, seen in figure 2, by means of spouts which direct them into the bins. At *F* is the feed box, at *T*, *T*, feed-tubs for mixing feed, at *c*, the cistern, *P*, the pump, *K*, the kettle, set in brick, with chimney behind it; at *B* is a spout, (also seen in figure 4), by which meal is dropped from the upper floor to the feed-box, the kettle, or the feed-tubs. At *C* is the root cutter. The whole of the cellar floor is covered with cement. The main floor is shown at figure 4. The pens are seen arranged on one side. Each pen is provided with a fender, (*F*), for the protection of young pigs against being overlaid by the sows, and a cast-iron feed trough, having a spout which projects through the front, for the purpose of carrying feed into the trough. At *H* is a hatchway for hoisting meal or corn into the room above; at *A* is a spout to bring feed from above. The large pen near the center is used for a slaughter-pen, and at the hatchway is a hoist for raising the hogs for dressing. The chain of this hoist is seen in the doorway at figure 1. The end pen, the door of which is seen at figure 1, is the reception-room for sows, the boar's pen being adjoining, and communicating with a slide door. The floor of this pen is 3½ feet above the ground, or so high that a sow brought in a crate in a wagon, can walk directly into it when the wagon is backed to the door and the crate is opened. The stairway to the upper floor is seen at the end of the plan, and that to the cellar, near the hatchway. This building has been found very convenient in use, and it is so arranged that it may be extended, if desired, to accommodate a larger number of animals.

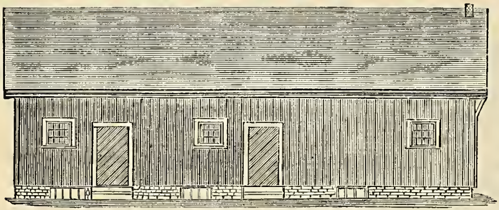


Fig. 2.—SIDE VIEW OF MR. CURTIS' PIG PEN.

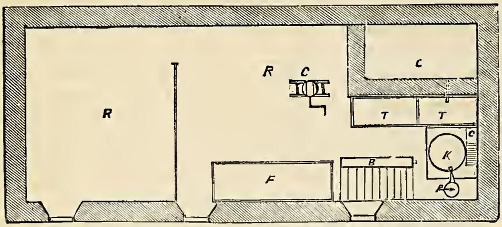


Fig. 3.—PLAN OF CELLAR OF PIG PEN.

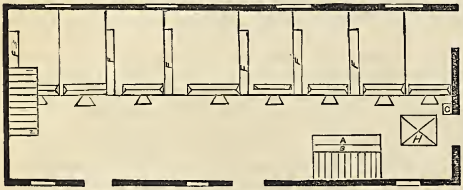
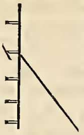


Fig. 4.—PLAN OF MAIN FLOOR OF PIG PEN.

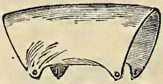
* * *

A Fence Gauge.—The gauge for a rail or board fence, shown in the engraving, is sent by "J. A. W." It is made of a piece of scantling 2 inches square, and 5 feet long. A number of ⅜-inch holes are bored through this piece as they may be wanted. Five pieces 2 inches square, and 4 inches long, are bored through their length with ⅜-inch holes, and are bolted to the longer piece where the fence boards will rest on them. A cross piece 12 inches long is bolted to the end of the second 4-inch piece, as shown, and a brace is bolted on the other side of the longer piece, as a support for it. When used, place the end of the cross piece against the fence post, and press the brace into the ground, by which the upright piece is supported. The ends of the fence boards are rested on the gauge while the other ends are nailed to the post. Then the opposite ends are nailed. The cross piece keeps the gauge out of the way when nailing the boards.


GAUGE.

A "Bratted" Sheep.

Exercise is as necessary for sheep in winter as in summer. Close confinement is unhealthful for an animal designed, or at least permitted, by nature to inhabit mountain regions and rocky pastures. The activity natural to sheep may be noticed cropping out in lambs a few days old, which will climb and sport upon any convenient rock, boulder, lumber pile, or stump, to which they can gain access, in preference to any level place. But to give exercise indiscriminately, without regard to the weather, is not safe even for the hardier, close-fleeced Merinos, or Southdowns, and for the more open fleeced long-wool sheep is pernicious. Open sheds offer a partial resource in moderate weather, when it is not advisable to give the run of a field. There are times, however, when it is advisable to give valuable sheep some exercise during unfavorable weather, and this may be done by adopting a precaution in common use amongst Scotch shepherds. On the Scottish lowlands, as well as mountains, whole flocks are sometimes furnished with artificial protectors known as "brats." This word is derived directly from the Gaelic language, and means simply a cloak; it is also used by the Scotch to designate the bib, or apron, worn by children to keep them from soiling their other clothes. It is a distinct word from "brat," a coarse vulgar epithet applied to a child, and which is derived from the same root as "brood." The "brats" are pieces of cloth, or sometimes of sheepskin, fastened by strings upon the sheeps' backs, and often sewn to the wool by coarse thread. They are made to cover the spine and loins, the part of a sheep's body most susceptible to cold and wet. A good shape for a brat is shown in the engraving, which represents one side as it lies across the sheep's back. It may be made of the cheapest kind of a blanket, or of coarse cotton cloth, dressed with some water-proofing substance. It is only necessary that it should keep off rain or snow. Warmth is not required; the dry wool will supply that. A very good material is a piece of common "gum" or rubber blanket, such as are used in the army. An old water-proof overcoat will cut up into four of these brats, and a light coat will make several of them of suitable size for young lambs. A salt sack will make four brats of large size. Much refuse material of the household or barn, may be utilized for them, especially for those of small size, such as will be needed by and by for the lambs. The lambs may be sent out many a day when the weather is threatening, if thus protected, when they would otherwise have to be confined to close pens or damp yards. A heavy thunder shower will do no injury to a well bratted lamb. At the breeding season, when it is not convenient to separate a ram, that is not suitable to breed from, from the ewes, he may be furnished with a brat reversed, and worn underneath. This is often done, and is effective.


"BRAT" FOR A SHEEP.

Pumps for the House and Barn.

Perhaps there was never a time known to those living near the Atlantic coast, when more trouble and inconvenience was experienced than now, on account of an inadequate supply of water for domestic uses and for stock. Over an extensive range of the country, farmers are now melting snow to supply their necessities, or are hauling water from ponds and streams. This is not only costly and inconvenient, but in many cases makes it necessary to use impure water, and is therefore unhealthful. We do not remember to have had so many inquiries at any one time as are before us at the present, in regard to the water supply, and the most useful pumps for bringing it to both the house and the barn from one well. With regard to the water supply, it might be said that there can be no better time than the present for deepening or cleaning old wells, or sinking new ones to a depth at which a permanent supply of water can be obtained. The long-continued dry weather of last year, has left the subsoil very dry, and free from surface water, and has temporarily dried up all but really permanent springs. With regard to pumps, we can only now find space to describe one that we have tested in use. This is Blunt's "Universal Force Pump," of which we give some illustrations. It is called "Universal" from the fact that all the parts are interchangeable, and any one can be replaced if broken or worn; that the upper part, or air chamber, can be turned around, bringing the handle either to the right or left hand of the spout, or opposite to it, and that their construction and material are of the best in every way. There are fifty different kinds of this pump made, to meet every requirement. Those illustrated here, are selected from the number, as being applicable to the majority of circumstances. At figure 1 is the in-door force pump, which is placed upon a base that can be screwed on to a sink or stand. The spout has a "two-way" tap, by which the stream of water may be thrown up into a tank or into a hose for watering a garden, washing windows, or other purposes, or a pipe may be connected with it, through which water can be forced from the house to the barn or cattle yard; thus watering the stock without going out of doors.

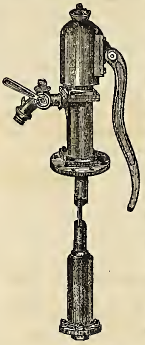


Fig. 1.—IN-DOOR PUMP.

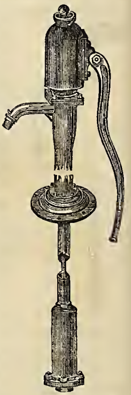


Fig. 2.
OUT-DOOR PUMP.

An out-of-door pump is very similar to this, but furnished with a suction cylinder, which may be placed in the well out of reach of frost, or for use in deep wells. At figure 2 is shown a high standard, deep-well force pump for out of door use, which will throw a stream strong enough to be useful in case of fire, or to supply the barn as well as the house. (In the figure the body of the pump is broken off to save space.) Pipes may be laid as shown at figure 3, to supply the house and barn, or at figure 4, either to pump soft water from a cistern, or to force the water from a well into the kitchen, or the tank, or to the barn or water-trough. By arranging the pipes with taps, as at figure 5, which can be done by the makers if ordered—all these services may be performed at the well while protected from the weather in a covered well-house. A pump by which all this may be done, certainly deserves the appellation of "Universal," and in its application to these purposes, will meet the necessities of many persons whose inquiries about water supply are here answered. These pumps are made by "The Nason Manufacturing Company," whose advertisement has been in the *American Agriculturist* for some time past, and who will send, upon application, catalogues describing the pumps and containing full details.

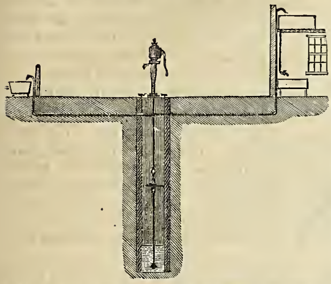


Fig. 3.—SUPPLYING WATER TO HOUSE AND BARN.

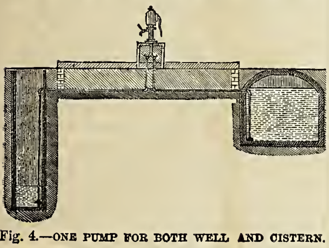


Fig. 4.—ONE PUMP FOR BOTH WELL AND CISTERN.

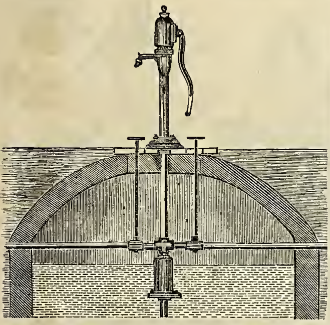


Fig. 5.—ARRANGEMENT OF PIPES FOR A WELL-HOUSE.

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ANIMAL PORTRAITURE.—In the several criticisms with which our remarks upon the prevailing style of animal portraiture have been met, the main point at issue seems always to escape observation. It is not that the accepted pictures are unattractive, or not models of what the animals are desired to be, that they are objectionable, but because they are not real. The portraits of noted animals are for the purpose of educating the masses of farmers who have not opportunities of seeing the animals themselves, or else presenting them has no purpose whatever, unless it be to tickle the vanity of their owners. Educated breeders are not deceived, they know better than to suppose that they are like the animals, and accept the pictures as types of what they may perhaps arrive at by and by. The point at issue is very well met in the following remarks concerning the portraits of the Centennial Jerseys in the *American Agriculturist* for Jan., 1877, from a more than usually courteous correspondent of the "Country Gentleman": "It is just this essential element of *life* and *action* that is beyond the reach of photographic art. Indeed, to recur to the really excellent specimens of this style of art—the Jersey portraits in the *American Agriculturist*—that paper expresses regret at its inability to add to the collection the portrait of Chetten Duke, the prize bull, 'as it was not possible, after many endeavors, to procure a photograph, on account of the animal's restlessness.' Fancy Paul Potter's Bull, or the Toro Farnese, standing meek and quiet while a gentleman with his head under a black cloth leveled a camera upon him and obtained a profile view!" —Now, in reality, it is not life and action that we want; it is form, figure, massiveness in the beef animal; udder and other conspicuous points in the milk cow. Paul Potter's bull is a creature of the imagination, it may have been modeled from a live animal, but the *life* and *action* belong to the painter's art. It is very funny, though, for this writer to associate "life and action" with the style of portraits to which we object. A wooden box with four legs, or a saw-horse, is more lively and active than these remarkable representations of what animals might be, could breeders induce nature to adopt their ideas. We illustrate for educational purposes, in the endeavor to popularize a desire for better things amongst farmers, and this is done better by giving pictures which they can easily believe to represent real animals—although the legs may be thick—than those in which the proportions are seen at once to be unreal.

Guinea Grass—A Forage Plant.

In an article last month on Durra, (*Sorghum vulgare,*) we mentioned that Durra, being sometimes called "Guinea Corn," had been confounded with "Guinea Grass," and thus writers were discussing two different plants under the same name, with the natural result of difference of opinion, and general confusion. The plant known in the Southern States as "Guinea Grass," and also called "Cuba Grass," is, like the Durra, a species of *Sorghum*. That was described as *S. vulgare*, while this is *Sorghum ha'epense*, a name (from the Arabic name for Aleppo) which indicates its eastern origin. It is found in Southern Europe, the East Indies, the Cape of Good Hope, and in Australia; in the West Indies, and in Brazil; how far its occurrence in the western hemisphere is due to its escape from cultivation, is impossible to tell, but in Georgia and Florida, where it is not rare, it is evidently a naturalized plant. As a part of the history of this grass, it may be well to state that it has given botanists at various times some trouble, and those who have occasion to trace its botanical relationships, will find that some authors, probably from having incomplete specimens, have referred it to various genera, while others have made a new genus for it. It is not necessary to give all these synonyms; suffice it to say that it has at different times been placed in *Andropogon*, *Holcus*, *Milium*, and *Sorghum*. While the habit of the plant, as shown in the engraving, given on page 100, is very different from that of the *Sorghum* figured last month, a careful study of the flowers in specimens from Florida and from the East Indies, shows that the two must be placed in the same genus. Unlike the other, this is a perennial, and forms a strong, creeping root-stock, as large as one's finger; this root-stock or tuber is abundantly supplied with buds, and serves as a means for its propagation. The root throws up an abundance of stems, from three to four feet high, which are clothed with an abundance of long, narrow leaves, and surmounted by a panicle or flower cluster, which is very loose and open; when it first comes into flower, the branches, being erect, make the cluster quite narrow, but it afterwards becomes more spreading and loose, but is never dense and compact, like the head of Durra. The individual flowers in this, as in the rest of the genus, are in small clusters of two and three together, consisting of one fertile one, and one or two others, on short stalks, which are abortive or staminate. A cluster is shown at the lower part of the engraving; it has a central fertile flower, with a long awn or bristle, and lifted above it, on slender stalks, are two others, which are awnless, and each bear three stamens. After the stamens have shed their pollen, these two flowers sooner or later fall away, and then the flowering appears so differently, that it is not at all surprising that botanists should have been in doubt where to put it. The manner of cultivation and the uses of Guinea Grass, must be deferred until another number.

The Sweet Potato.

BY CHAS. A. PEABODY, MUSCOGEE CO., GA.

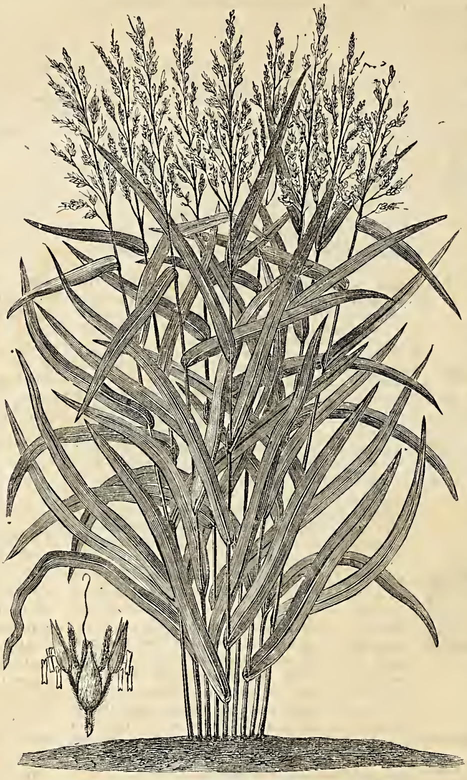
Producing Improved Varieties—How to Start the Plants—Method of Culture—May be grown Profitably at the North—Directions.

Some time ago we received a letter from Chas. A. Peabody, Esq., Muscogee Co., Ga., in reference to the Sweet Potato. He thought it strange that northern cultivators, while they had done so much in producing from seed improved varieties of the common potato, had in a similar manner not turned their attention to the Sweet Potato. He mentioned his own success with new seedlings, and suggested that with better sorts and improved methods of cultivation, the sweet potato crop might be made much more certain and more profitable in the Northern States than it now is. We replied that the difficulty in procuring seeds was the great obstacle to experimenting with varieties; that in cultivating the sweet potato some 12 or 15 years, we had seen flowers but once, and they came too late to ripen seed, and asked him to give an account of his experiments, with his methods of culture, for the benefit of the readers of the *American Agriculturist*. This he complied with, and we bring together from several different letters a summary of the whole.

In the Southern States, sweet potatoes are classified as the Yam, and the Spanish varieties. The Yam potatoes, often called Yams simply, are not to be confounded with the Yams proper of the West Indies and other tropical countries, which are very different plants. The Yam potatoes are usually larger and lighter colored than the others, have lobed leaves, and are much later in maturing; they are cultivated for the main crops, to be stored for use in winter, when they become very sweet, almost too sweet to suit the taste of persons from the North; these are only propagated from slips or cuttings. The Spanish varieties are numerous, of various shapes, and colors being of different shades, of yellow, red, and purple. They have nearly entire leaves, and on account of their earliness, are planted for the first crop; they are propagated from slips, like the others, but also from cuttings of the potato itself. With reference to flowers and seed, Mr. Peabody says that he has known farmers, who have cultivated sweet potatoes all their lives, to assert that they never saw a bloom, but that while they fail to flower in some seasons, in others his sweet potato fields are as full of blooms as are the Morning-glories on the trellis of his porch.

New Varieties of Sweet Potato.

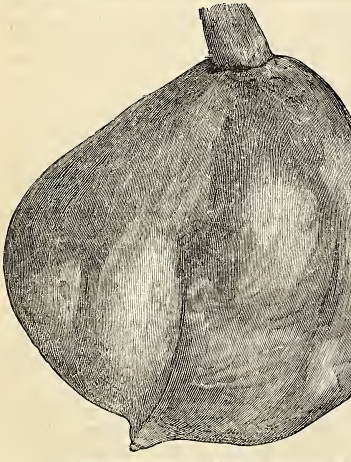
Mr. Peabody has been experimenting for several years with seedlings, with a view to produce improved varieties, and has so far succeeded that he has one that bears the same relation to other sweet potatoes that the Early Rose does to other common potatoes. He states that he has had potatoes fit for the table in six weeks from the time the vine appeared above ground. Mr. P. sent us samples of this potato, through Messrs. J. M. Thorburn & Co., of this city, who have arranged to take the stock, and we give an engraving, showing its usual form of about half the actual size. Mr. P. proposed, on account of its having, when in perfection, a light rose-tint, and also its earliness, to call it "Early Rose," but as that would be very likely to lead to confusion, he has adopted the suggestion to call it "Early Peabody."



GUINEA-GRASS.—(*Sorghum halepense.*)—*See page* 99.

Different Methods of Propagating.

The usual method is to place the potatoes in a hot-bed, and cover them with a few inches of fine soil; the buds will soon start, and form shoots; these, as they grow, make roots of their own, and when they are 8 inches to a foot long, and well rooted, the most forward ones are removed, and the others, not yet large enough, are allowed to grow on. It is customary to split the larger potatoes lengthwise, and lay them flat-side down in the bed. After the shoots appear, they should have the same care as other hot-bed plants, to prevent them growing weak and drawn up. These shoots, known in the Southern States as "draws" and "slips," are at the North called "sets" or "plants." Another method is by cuttings; the strong vines from an early planting, are cut into pieces about a foot long, and set out on ridges, for the late, or main crop; in planting, two joints are left above the surface. The Yam varieties can only be propagated by these two methods, but for the Spanish varieties, a third is practised. The potatoes are placed in a moderate hot-bed, and in about two weeks the buds, or eyes, will have pushed sufficiently to show their position. The potatoes are then cut up, leaving one or two buds, or eyes, to each piece, and the pieces are planted in the ridges where they are to grow. As soon as the ground gets warm, these buds push rapidly. Mr. Peabody prefers this method for his early crop, and finds that vines so raised will give him potatoes fit for the table two or three weeks earlier than those from slips. Whether this will be found to be the case in northern localities, is a matter on which we shall experiment. The method of raising from cuttings is only suited to warm climates. He planted cuttings last year the first of August, and made a good crop before frost. The time to commence propagating will depend upon the locality. In Georgia, the potatoes are put into the hot-bed about March first, and the slips planted any time in April. In the climate of New York, the beds are started about the middle of April, and the plants set out from the first to the 20th of June. It is better to defer planting until the soil is well warmed and the weather settled.



NEW SWEET POTATO, "EARLY PEABODY."

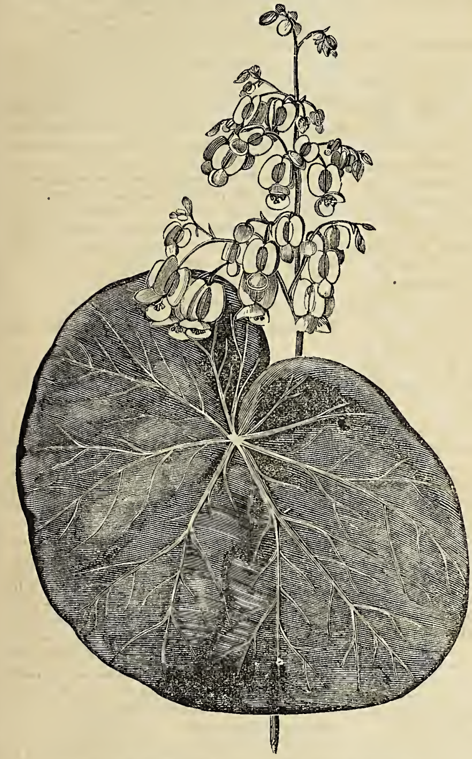
MANNER OF PROPAGATING.—(*See page* 102.)

The Land and How to Cultivate them.

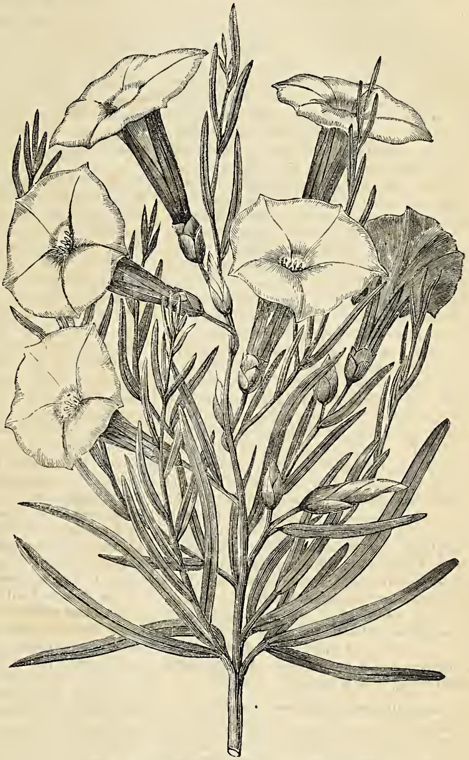
The sweet potato may be cultivated on any soil but a heavy one. We have seen fine crops on white sand that would blow into drifts with every heavy wind. Mr. Peabody says that he has never seen a sand-hill so poor, but what, with judicious manuring, it would bring a good crop; and that any soil which will produce a fair crop of corn, will produce one of sweet potatoes, provided it is a sandy loam. He says that he has known a crop in his county of 800 bushels of sweet potatoes to the acre, upon land that would yield 50 bushels of corn, and was fertilized with 400 lbs. of Peruvian Guano to the acre. Mr. Peabody first thoroughly plows in the manure, and throws up ridges 2½ feet apart with the plow. We prefer to not plow in the manure, but to place it on the surface and turn the ridges upon it, and these we make 3½ to 4 feet from center to center. Mr. Peabody plants his pieces of the potato at 12 inches apart; we plant our slips at 15 inches apart in the ridge. The sides of the ridges and the spaces between them must be kept clear of weeds until the vines cover the ground. We move the vines once a week or so, to prevent them from taking root; this is quickly done by means of a rake handle or other stick.

Keeping the Potatoes during Winter.

Those who grow largely in the Northern States, have a house which can be kept heated to a temperature of 60°. Small quantities may be packed in cut straw, or in very dry sand, and be kept in a warm, dry place, such as a cellar, in which is a furnace. Mr. P. keeps his in pits containing 50 to 75 bushels. He puts down a layer of potatoes, then a layer of dry sand, and so on alternately, building up the heap in a pyramidal form. Earth is put over the outside of the heap sufficiently thick to prevent freezing, and a roof or shelter of boards is built over it to shed rain. Stored in this manner, the potatoes come out perfectly sound in the spring. Of course this would not answer for a cold climate. It is very important to the success of any method of keeping, that the potatoes be dug and handled with great care, as cuts or bruises induce decay. We place Mr. Peabody's name as the author of the article, as it is essentially his, although, in compiling it from three different letters, we have used our own language, and while we give his facts, he is not responsible for the manner in which they are presented.



WINTER-BLOOMING BEGONIA.—(*B. hydrocotylifolia.*)



SLENDER-LEAVED IPOMŒA.—(*I. leptophylla.*)

The Slender-Leaved Ipomœa.

The traveler in the "far West," which in the present case we use for the country in and near the Rocky Mountains, however indifferent he may be to flowers in general, can not fail to notice the abundance and beauty of what appears to be a bushy Morning-glory. The plant was first discovered in 1820, by Doct. James, the botanist of Maj. Long's expedition, but his specimens were imperfect, and it was not determined until the plants collected by Fremont, in 1842, were reported upon by Doct. Torrey, who named it *Ipomœa leptophylla*, which may be translated as the "Slender-leaved Morning-Glory." It appears to be more abundant than elsewhere in what is now the State of Colorado, occurring on the table-lands and water-courses, in some localities, in the greatest profusion. A number of years ago one of our subscribers in Colorado sent us specimens for determination, which proved to be this plant, and proposed to send us a root, which offer was gladly accepted. The root at last came; it nearly filled an ordinary shoe-box, weighed 60 or 80 odd pounds, (we have now forgotten which), and had the appearance of an enormous ruta-baga. A good-sized well was made in the garden, and the root planted, but the summer being wet, and the root badly bruised in its journey, instead of growing, it decayed. The friend who sent it said that this was only a "medium-sized" specimen, the full-grown ones being too difficult to dig. This root, and our subsequent experience with the plant, made it very evident that it was very far from being an annual. Doct. James reported it as an annual, and Prof. Porter, as late as 1874, mentions it as "annual (?)." The root throws up numerous stems, two to three feet or more high; these produce a great many branches, some of which starting from the base, give the whole plant a dense, bush-like aspect. The very narrow leaves, from two to four inches long, acute at each end, are somewhat fleshy. The flowers, one to four together on a short stalk, are from two to two-and-a-half inches long, and of the shape given in the engraving, which shows a portion of a branch reduced in size. The bright, light purple color of the flowers, their great abundance, and the delicacy of the foliage and stems, all combine to make the plant remarkably attractive, and eminently desirable in cultivation. There is but one obstacle to its becoming popular: its roots being quite too large for transportation, it must be raised from seeds, and the seedling plants are a long while in coming into flower. We have seedlings three years old, that have shown no disposition to bloom, and we do not know how large the roots must be before flowers may be expected. This, however, is an objection only to those impatient gardeners, who forego many good things that must have a year or two to grow and get ready before they will flower. This Ipomœa is well worth waiting for, and the root being perfectly hardy, it can be left in the ground to take its own time. Our plants have been in the open garden, near New York, for three winters, and there is a plant at the Botanic Garden at Cambridge, that has endured the winters for some 20 years without injury, and flowers every summer. We learn that Messrs. B. K. Bliss & Sons have received the seeds of this plant, which are now offered for the first time.

Begonias and their Uses.

In looking over a list of Begonias, with the dates of their introduction, we were surprised to find that many of those which are still far from common, have been in cultivation from 30 to 50 years, and some that are figured and recommended in recent works, were known 25 years or more ago. It is only within a comparatively few years that Begonias have become well known; whether they were regarded as of difficult cultivation, or the fashion had not set in their favor, we do not know, but while they were formerly only to be found in large collections, they have of late become exceedingly popular plants. There is scarcely any genus that affords plants suited to such a variety of uses. There is one set cultivated for the beauty of its foliage only; another for its brilliant winter-blooming flowers; another gives both ornamental foliage and pleasing flowers, and lastly, another group, all the foregoing being for the greenhouse, which affords most charming border or bedding plants. They present, also, a great variety in habit; some have very short stems and enormous foliage; others grow two feet or more high, with small leaves; some have a prostrate or half climbing habit, that fits them for use as basket plants, and then another with large tubers, which can be dried off and stored away, like a gladiolus bulb. Being natives of the warmer parts of America, some few being from the East Indies, we should not look among them for hardy plants, yet some of the tuberous-rooted kinds are hardy in England, and no doubt would be so in the warmer portions of our own country. Those who have greenhouses, find Begonias most useful plants; they possess two excellent qualities: they are propagated with ease, and they may be kept small or large, as one may wish; put a plant in a three-inch pot, and it will do its very best, and it can do no more in a six or eight-inch pot, except to be larger. The ease with which they are managed, and the great variety in their foliage and flowers, make them most valuable for greenhouse decoration. It is not necessary to enumerate species and varieties, as the catalogues do that. We give an engraving of a single leaf and flower stem of one which has afforded us much satisfaction for several winters, it being of the group that are ornamental in both foliage and flower. It is *Begonia hydrocotylifolia*—that is, with leaves like *Hydrocotyle*, and if one is a stickler for English names for plants, he can say the "Water-Pennywort-leaved Begonia." Its rounded, fleshy leaves, are of a rich dark-green, are strongly veined above, and reddish beneath, and it would be desirable for these alone, but it throws up panicles of pinkish, sometimes almost white flowers, which are useful for cutting, and it keeps on doing so, as if it never would stop.

Begonias for Window-Culture.

Among the species and varieties cultivated by florists, to furnish cut-flowers in winter, are the *B. fuchsioides*, often called "Coral-drop," with drooping, fuchsia-like, scarlet flowers, and its white variety, differing only in color; *B. nitida*, *B. incarnata superba*, bright pink; *B. Weltoniensis*, with waxy pink flowers, and others. Most of these may be grown in a sunny window of a warm room, if *not over watered*, and when well managed make charming window plants. But in size and brilliancy, as well as in variety of coloring, the recent

Hybrid Tuberous Begonias

excel all others. These most charming novelties may be grown in pots for summer decoration of the greenhouse, or they may be turned out into the open border, either as single specimens, or massed as bedding plants. Some have flowers two to three inches in diameter, and are white, pink, orange, yellow and the most intense scarlet. New varieties are offered every year, and though still rather high in price (from 50c. to $1), are well worth all they cost, as they may be kept from year to year, and easily multiplied. *Octopetala*, *Bolivensis*, *Sedeni*, *Sutherlandi*, *Vietchi*, *Frœbeli*, and *Ne Plus Ultra*, are a few among many of these charming plants. The seeds are offered for sale, but our experience with these has not been encouraging. Several years ago, when these Begonias were first offered, Messrs. B. K. Bliss & Sons sent us a few bulbs; these gave so much satisfaction that, seeing the seeds offered abroad, we ordered some from one of the leading European seed-houses, who made a wonderful flourish about them in their catalogue; we raised 20 or more plants, and they were no doubt *tuberous-begonias*, for they seemed to run all to tuber; after keeping the plants in the greenhouse all through summer and winter, they were put out to flower. Every one produced a miserable little white flower, less than half an inch across—but we had a lovely lot of *tubers*. If any have fared better from seeds, we should like to know it, and who raised the seeds.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE XI.—THE GOOD OF CROSS-FERTILIZATION.

We argue that cross-fertilization must be a good thing because there is so much of it, because it is provided for in so many cases, and in such various ways. And, with our present ideas of how things go on in nature, we do not allow that this argument is much weakened by the fact that many flowers freely self-fertilize, and this may habitually occur in the very flowers which are evidently adapted for crossing. Cross-fertilization depends on outside agencies, and may fail, although it be the best thing. Self-fertilization is independent and surer, usually secures the immediate purpose well, even if not so good in the long run. To make an agricultural comparison, by self-fertilization we are most sure of a crop, by cross-fertilization we are more likely to have a long succession of good crops. The best compromise, on the whole, is made in flowers which cross-fertilize when duly served by insects or winds, and self-fertilize when they are not. That is a common case, and the flower we are going to consider is a good instance of it.

The common Morning-Glory of our door-yards, (*Ipomœa purpurea*), opens each flower for only one day. It opens over night, and on a bright day it closes and fades before the sun is high; on a cloudy day it lingers longer. Bees and other flying insects freely visit these blossoms; and the flower is adapted for crossing, the stigma projecting beyond the anthers; but the crossing must be done in the course of a few hours, or not at all. Here is a great risk. "It might have been thought that it could not be fertilized without the aid of humble-bees, which often visit the flowers; but as the flowers grow older the stamens increase in length, and their anthers brush against the stigma, which thus receives some pollen." This is from Mr. Darwin's new book, from which we made quotations in our last article. There can be only six seeds to a flower, and Mr. Darwin found that self-fertilized flowers were nearly as prolific as the cross-fertilized.

Now in cases like this, one may say that cross-fertilization is beneficial, and in the long run necessary; but how are you going to prove it? The theory is plausible; but facts are wanted for convincing. Mr. Darwin is not a man to go upon theory when facts are to be had. He carried on a series of experiments upon this very plant for a dozen years, and the details and discussion of the conclusions fill two chapters of his new book.

He raised a stock of seedlings, all from one plant, and when they blossomed, he close-fertilized one set, and cross-fertilized another. The seeds of the two sets were saved separately, and were allowed to germinate on damp sand. Whenever one seed of each set germinated at the same time, he took the pair which thus had an even start, planted the two on opposite sides of the same small pot, gave them equal exposure to light, and equal watering, stuck in a similar rod for each to climb on; and as soon as one of the pair reached the top of the rod, both were measured. Parallel experiments were made with a number of such pairs in the same pot, the close-fertilized on one side, the cross-fertilized on the other, and the maximum growths measured; but the single pairs were mainly relied on. The upshot was, that all the crossed plants attained a greater height than their antagonists, and that the average height of the six crossed plants was 86 inches, while that of the six self-fertilized was $65^{66}/_{100}$ inches. That is the crossed were to the self-fertilized, in vigor of growth, as 100 to 76.

The course of experiments was continued for ten generations. Flowers of the crossed plants of this first generation, were crossed by pollen of other plants of the same generation; and flowers of these had an advantage, and the diminution of fertility in the self-fertilized generations, showed itself in the lesser size of the anthers, smaller quantity of pollen, and at length in disposition to monstrosity.

Trial was made of cross-breeding between different flowers of the same plant. But this appeared to give no advantage over self-fertilization. Trial was made of wider cross-breeding than that of the ten generations intercrossed between near brethren. A Morning-Glory was raised from seed which grew in a distant town, and when its pollen was used for the cross, the plants resulting from the union were extraordinarily vigorous. When crossed with some of the ninth generation of the continuously cross-bred, the resulting seedlings were "as superior in hight, and almost as superior in fertility to the again inter-crossed plants, as these were to seedlings from self-fertilized plants of the corresponding generation.

This generally held true in other species of plants. It shows in a striking way that cross-fertilization is beneficial, while it has also been shown that the mere crossing of different flowers does little, if any, good. The reason why cross-fertilization is beneficial now begins to appear. We will present Mr. Darwin's view of it in the next article.

A Useful Method of Propagating Plants.

BY PETER HENDERSON.

Something Important to Florists—Useful to Amateurs—An Easy and Sure Method.

A good many years ago, we published a method of propagating Geraniums, that we believe originated with us, and which we called, for want of a better term, "Layering in the Air." It consisted in tonguing the shoot to be used as a cutting half through with a knife, as in the ordinary layering; the shoot so treated formed granulations, or "callus," on the cut surface, and was in a condition to form roots immediately on being detached and put into the earth.—Like many other useful practices, this was abandoned or forgotten by us, until last fall, when we saw that, owing to the unusual dry summer, our stock plants of many of our finest ornamental-leaved Geraniums, and other plants of like character, was so apparently lacking in vigor, that to detach cuttings in the ordinary way of propagation, would probably not only result in the loss of the cuttings, but be of great injury to the "stock plants" themselves, by so denuding them of leafy shoots in their then weak condition. Here we again bethought ourselves of our long forgotten plan of

"Layering in the Air,"

but this time we improved upon the former way of doing it. Instead of tonguing the shoot to be used for a cutting, as before, it was merely snapped short off, at a point where the condition of the shoot or slip would make it hang on to the plant, by the merest shred of bark, as shown in the engraving on page 100. Slight as this strip of bark appears to be, it is sufficient to sustain the cutting, without any material injury from wilting, until it forms the "callus," or granulated condition, which usually precedes the formation of roots. The cutting, or slip, may be detached in from 8 to 12 days, after it has been broken in the manner described; and then potted in 2 or 3 inch pots. If watered and shaded rather less than required by ordinary cuttings, it will form roots in 8 or 12 days more, and not one in a hundred will fail, even of plants of the Tricolor Geraniums, which we all know are difficult to root under the ordinary modes of propagation, particularly in hot weather. We last fall propagated in this way nearly 10,000 plants of the Tricolor class, with a loss of one per cent; had we adopted the ordinary method, even with the plants in good condition,—our experience has been that a loss of at least 50 per cent might have been expected.

Useful for a Variety of Plants.

This plan is applicable to many other plants as well as Geraniums; we are now using it with excellent success on the new double Poinsetta. The following plants may be also propagated with great certainty by this method, using the young unripened shoots: Abutilon, Begonias, Carnations, Heliotropes, Crotons, Cactus of all kinds, Lantanas, Oleanders, Petunias (double), Pelargoniums, or Geraniums of all kinds, together with nearly all kinds of a half woody or succulent character.—Besides the absolute certainty of having the cuttings root by this method, it has another most important advantage: All propagators know that many kinds of plants when cut back for cuttings, become weakened, so much that, if not carefully handled, they may die; also that if two or three crops of cuttings are taken off as they grow, the "stock plant" becomes permanently injured. By this method of breaking the slip, so that it hangs by a shred to the parent plant, the roots have to use their functions for its support nearly the same as if it remained entirely attached to the plant. This results, exactly as we wish, in causing the parent plant to strike out shoots *below* the broken slip, and these again, in their turn, can be so treated.—We are using this method of propagating this winter on all such plants as we wish to make the most of, and with satisfactory results.—I may say that, in certain conditions of the shoot, instead of snapping it will "knee" or bend only; in such cases, it will be necessary to slip it two-thirds through with a knife, but in most instances it will snap and hang by the shred of bark, which is the best condition.

Changing the Bearing Year of Orchards.

Last year apples were so abundant that, in some localities, they would not pay for handling, and large quantities were left to decay where they fell. In view of the fact that a year of excess and low prices, is followed by one of scarcity and high prices, inquiries have come to us in such numbers, as show that many are considering the practicability of changing this state of affairs. It is an encouraging sign that farmers are induced to think about their orchard at all, for as a general thing there is no part of their belongings so neglected as this. Trees are set, but it is looked upon rather as a waste of land, so the orchard must be cropped, and while no other part of the farm is expected to do it, that occupied by the orchard must yield two crops. The cause of all trouble with fruit trees, whether of failure altogether, or occasional excessive bearing, and the rest, may be summed up in one word—neglect. We now confine our remarks to the present trouble, and to answering the various inquiries about alternate bearing. The apple tree left to itself, will generally bear such an abundant crop that it requires another year, and sometimes longer, to recuperate, and accumulate sufficient nutriment to form buds and nourish another crop. This tendency is very marked in some leading varieties, and as it has been going on for many years, the habit has become fixed, and when we propagate these varieties, the young trees start with that as one of their peculiarities, in which they have been educated, so to speak. It is well known that this tendency is much more marked in some varieties than in others, and while some naturally fall into alternate bearing, others resist it, and will, if they have a fair chance, give a crop of fruit every year. This is a character to which little attention has been given by our pomologists; they state if a tree comes into bearing early,—or if it is an abundant or shy bearer, but its tendency to annual or biennial bearing is rarely recorded, while it is one of the most important qualities. Varieties that naturally bear annually, may be converted into biennial bearers by starvation; planted, as they often are on poor soil, and robbed of their nutriment by another crop, the trees cannot get food enough to enable them to carry even a small crop every year, and they are forced into alternate bearing. The practical question is, how can trees that now bear excessively one year and nothing the next, be made to bear moderately every year. So far as the alternate bearing is due to the poverty of the soil, the remedy is evident, and no doubt would be, with many varieties, sufficient.

Will Manuring Help?

Our correspondent, "Connecticut," in writing us, says: "I once knew an old apple tree, an inveterate biennial bearer, that was made to change its habit by breaking up the sward in which it stood, and cropping it with potatoes; the sward was heavy, and in its decay enriched the ground, and besides this, the potatoes were well manured. But the manuring was not continued beyond one season, and the tree in a few years relapsed into its old ways." —We agree with our correspondent that fertilizing the orchard will help, and in some cases be all that is required, but that it will break up the biennial habit where it has been fixed through many generations, we do not believe. Its tendency will be to strengthen it by making the crop on the bearing year all the more excessive. In such cases nothing will break up the habit but the removal of a large portion of the fruit on the year of abundance.

Will it Pay to Thin the Fruit?

That this severe thinning will change the bearing year there is sufficient testimony, but there is one point on which we lack evidence—will it pay? If any of our friends have tried thinning to induce annual bearing, or to reverse the bearing year on full grown trees, we ask in behalf of many inquirers that they will give their results. With young orchards, just coming into bearing, the case is very different, and whoever will take the pains, and give the young trees the needed care, can make their orchard bear annually. The education of the trees must begin with their first fruiting, as the first excessive crop, though small in itself, starts the tree on the wrong track. When the trees are young, the quantity of fruit to be removed is small, and all within reach. Of course the cultivation of the soil must not be neglected, but a healthy growth maintained. Whoever will start right with his orchard, and treat it fairly, will have no reason to complain. Among the varieties of apples that are naturally annual bearers, though they may be starved into bearing biennially, or not at all, are Vandevere; Sops of Wine; Grimes' Golden, a comparatively new apple of great excellence; Milam; Minklers'; Rawles' Janet, for the south; Benoni; Hubbardston Nonsuch: Domine; Higby Sweet, and English Sweet (Ramsdell's Sweet at the south). If any of our fruit growers can add to this list of annual bearers, we hope they will do so.

* * *

A Large Caladium.—No matter what name botanists may fix upon, *Colocasia*, *Arum*, *or Alocasia* for the enormous aroid now so much planted for its fine, large ornamental foliage, *Caladium esculentum* is firmly fixed as a popular name. We thought we had grown fine specimens ourselves, but all that we have had or seen, are pigmies when compared to one raised by Mrs. A. T. Johnson, Des Moines, Iowa. She sends a photograph of her plant as grown last summer, which is the third year, since she first had the bulb-like root from Peter Henderson & Co. The leaves come very near to the top of the bay-window, and are a little over nine feet in hight! We do not wonder that it was the admiration of the hundreds who came to see it, and doubt if in its home, in the Islands of the Pacific, it ever attained to anything like this.

* * *

The Pyracanth Thorn.—This is not, as some have supposed, a native of our Southern States, though it is occasionally found growing wild there. It is from Southern Europe, and having been long in cultivation, its seeds have been distributed by birds, and it is naturalized to some extent. It is a servicable and most beautiful hedge plant, but its ordinary form, with red berries, can not be depended upon as thoroughly hardy in the climate of New York. It sometimes happens that a variety of a plant is more hardy than its normal form, and the Pyracanth is an instance of this. The so-called white-fruited (but really yellowish) variety is much more hardy, and may be safely planted in a more severe climate than that of New York. Where it is hardy, as it is in Virginia and southward, nothing can be finer than the red-berried form, as the fruit is exceedingly brilliant in winter, but those living farther north must be content with less showy fruit. Both bear cutting well, and form a compact hedge.

THE HOUSEHOLD.

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Home Topics.

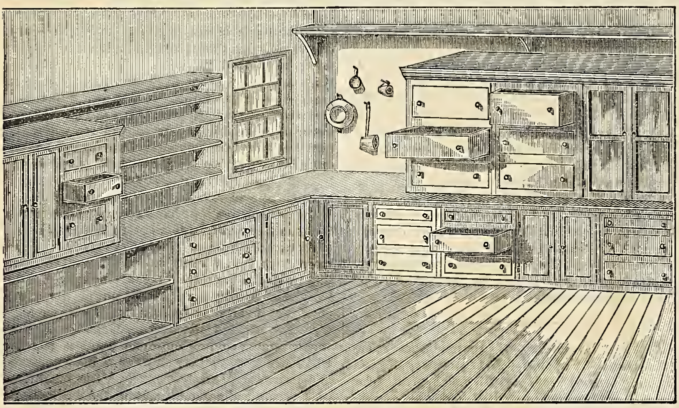
BY FAITH ROCHESTER.

Learning the Use of Books.

There are great readers, and there are industrious students, who have never really learned the right use of books. Most people read to be amused, or soothed, or entertained in some way, not for the sake of instruction. They want a new sensation rather than new ideas. It is a good thing to be amused and soothed, when we have need of such recreation, but a habit of reading merely for pleasure is, what I think an improper habit. Books should be used in such a way, as to assist our growth in wisdom, in goodness, and usefulness. The student who crams himself with facts and formulas, which he does not mentally digest and assimilate, not from a genuine love of knowledge, but simply to satisfy his greed for mental possessions, or his ambition to outstrip others, hinders rather than helps forward his intellectual growth. We learn from books, to be sure, but these are only secondary means of knowledge. Whatever we learn by our own investigation and observation is far more available and profitable to us personally, than what we get from other people's reports and views, contained in books. These reports and views are generally useful to us in proportion as we are able to judge of them by our own experience.

It seems to me that children are often greatly wronged by teaching them to read too young, before they have been encouraged to observe and inquire into what they see about them. A child who learns to read early and easily, is apt to become a gluttonous reader, rather than a good student. If it has no direction, but has a free run among story books and periodicals, it is apt to fall into a kind of literary dissipation. Its books may have a good moral tone, but it reads so rapidly, and so much, that no strong impression is made by any one book. Such reading may keep a child out of worse mischief, but it certainly keeps it out of greater benefits. For while it sits and reads, and reads, in a way to gratify an indolent or thoughtless mamma, who hates to be bothered by her child's questions and desire for "something to *do*," the faculties of observation and comparison, and the instincts for activity, which ought now to be getting such natural gratification, as would help forward the symmetrical development of both body and mind—these are lulled, and in time become dwarfed by inactivity. The "goodish" literature for babies, served up so abundantly on all sides, is a "soothing syrup," which proves disastrous in the end. When children are learning to read, it seems necessary that they should be supplied with some easy reading, easy to understand, as well as easy to pronounce. This reading should be attractive, but not sensational. The children's department in some of our best papers comes under the ban of "sensational," and should be indulged in very sparingly. We can not begin too early to guard the developing taste for reading. Children can enjoy and profit by reading, which is usually thought to be beyond their years, if it is read to them by an appreciative reader. In the "Record of a School"—Mr. Alcott's school of over forty years ago, reported by Miss E. P. Peabody, who was then his assistant, and republished within a few years at the request of Miss Louisa Alcott, who wished her father to have the credit for some of the "Plumfield" modes of teaching and disciplining, related by her in "Little Nan"—in this book I find ideas about reading to children and children's books, which my own experience confirms. Mr. Alcott thought it very important that the reading exercises of children should be such as would impress their minds and touch their hearts, and this benefit he set far above the mere learning to pronounce distinctly, and to "mind the stops." He was sometimes accused of not trying to teach the children to read well, because he devoted so large a part of the reading lesson to drawing out their ideas of the little they read, and to conservation suggested by the reading. But he believed that children so taught became in the end far better readers, because more appreciative, than those drilled mostly on rules of articulation, emphasis, etc. Miss Peabody wrote thus of it in her "Record": "It will probably, however, be difficult to find children who know so well how to use a book, when they are eight years old, as those who have been taught on his method, which never allows a single step to be taken, in any stage of the process, without a deal of thinking on the part of the child. Perhaps a general adoption of Mr. Alcott's ideas on this subject would lead to some check upon the habits of superficial reading, which do so much to counterbalance all the advantages arising from our profusion of books."

Mr. Alcott thought that every book read should be an event to the child; and all his plans of teaching kept steadily in view the object of making books "live, breathe, and speak;" and he considered the "glib" reading in some schools an actual hindrance to his purpose. When a child brings home from the Sunday School two or three little goodish books, which it devours on Sunday afternoon and evening, then reads the books taken out by its brothers and sisters, then borrows its playmates' library books, and reads them, and fills up the remaining leisure week-day hours with newspaper stories—is each book read likely to be "an event in its life?" It might go farther, and fare worse, for Sunday-school books, while sometimes trashy, are never immoral, and some of them would have an excellent effect, if there were not so many of them following in such rapid succession.



INTERIOR OF A CONVENIENTLY ARRANGED PANTRY.

Mr. Alcott thought that the best reading which children could do for themselves, in the early stages of their education, could not supersede the necessity of reading aloud to them, so that they might early be put in possession of the thoughts of genius, and be made to sympathize in the feelings inspired by their master works, and also have their tastes formed on their highest model. He was always on the search for books which he would like to read to his school, but though children's books were plenty, he could find few that answered his purpose. He read aloud mostly from the Bible, Pilgrim's Progress, Spencer's Fairy Queens, Krummacher's Parables, "The Story without an End," and Miss Edgeworth's Stories.

My own children, like most others I suppose, are very glad to have mamma read to them, and I am sorry when my days are so crowded with tasks that there is little or no opportunity for this. I have just finished the last chapters of "Hiawatha," and even the little girl of five enjoyed the daily portions, and derived some benefit no doubt, though she usually ran for a volume of the "Nursery," when I laid down Longfellow's poems, and asked me to read something now for her and baby. "Hiawatha" followed naturally after "Good Old Times, or Grandfather's Struggle for a Homestead," an excellent story of the early Indian wars, which suited our necessities well after the "Peter and Polly" Centennial story of the Revolution, which in turn followed delightfully the completion of Higginson's "Young Folk's History of the United States." But what we most need, perhaps, is not entertaining reading, or that which simply serves to inform the mind, but books which will have the effect of noble, well-bred companions upon our children. We can not choose their companions, as a general thing, but we ought to do our best to choose their books judiciously. In this respect there is a decided advantage in postponing the teaching of reading, until children are at least six years of age, *provided* they can have employment adapted to their stage of progress, and provided some one can attend to their questions, and read with them.

Plated Knives.

Here is what a reader of the *American Agriculturist* says to me, and through me to you, about labor-saving: "You seem interested in all means of saving labor. Why don't you mention plated knives? The use of silver-plated forks is now very common, but these do not prevent the necessity of a daily use of the scouring apparatus. When I do my own work, the scouring business is very tedious. I know it does not take much time, but that is the trouble with most all of our work. It takes but a few minutes to do this and a few minutes to do that, and so the whole day goes, unless one looks sharp after all these little things. So when I had occasion to buy a new set of knives, I got the silver-plated ones. I had no opportunity for choice, but got such as I could, and I don't know whether these are as good as they should be for the price—two dollars for half a dozen—but they have done duty daily for more than a year, and are about as good as new, though usually washed by one of my little girls, who sometimes lets them lie wet or dirty much longer than I consider good for them. These plated knives are a great relief to to me, and a step in the right direction I am sure. I don't know but my neighbors think me a little "stuck up," for most of them use steel knives and forks. More likely they smile at what they may consider the incongruity of the thing, for my furniture is all very plain and cheap, and my dishes are old and "nicked," and not all of the same pattern, and, as you may suppose from these admissions, we are quite poor. My relatives thought me rather foolish to get such knives, for they thought I might have my little girls scour the steel knives. But the children are too small to wash the dishes without kneeling in a chair or standing on a stool, and I find the task of training them to do such chores a rather difficult one. When they tried to scour the knives they made some litter which I did not like to trust them to clear up, and altogether the knife scouring business was rather trying to our tempers. I know that trials are good for us, but I have so many that I do not need to go in the way of any needless ones. The old steel knives still do duty for cooking use, and for scraping sticky dishes, but I never scour those. If I did, of course half the advantage derived from using plated knives would be lost. Aunt T. expostulated with me. She thought I ought not to let my little girls grow familiar with the notion that they might let knives go black. I told her we must draw the line somewhere, and just where it should be was a matter of taste perhaps. I told her I had discovered that acids would take the black off from my frying-pan, and leave it like a polished knife, but when I had washed and wiped it as clean as I could, I was content to put it away without scouring, though I knew it could be made bright as steel. And so of my tin-ware. I let it go quite dim after it has become so by much use, contenting myself by such cleansing as soap and hot water can give, without the use of sands and polishing materials, which would restore its original brightness. If I can do all that, I can let my cooking knives go unscoured. If they were ever so bright when I began to stir potato warming in the spider with them, they would be black before the food was cooked, and for this reason I use my plated knives for peeling or stirring fruit or such food as acts quickly and strongly upon iron. You now have my "ideas" on the subject of plated knives and forks—only perhaps the most important idea of all is, that by saving a little time, and a little strength, and a little patience, by the substitution of plated for steel knives, I think I have gained a little time, and a little strength, and a little patience for the benefit of my family."

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A Conveniently Arranged Pantry.

BY L. D. SNOOK, YATES CO., N. Y.

In houses of the old style there was either no pantry at all, the kitchen being furnished with a dresser and shelves, or it was merely a small closet to hold the articles in less common use. In modern houses the pantry is next in importance to the kitchen, and it should be so arranged as to accommodate all the appliances used in cookery, as well as the china, glass-ware, cutlery, and other articles for the table. In arranging a plan for building, the pantry should receive careful consideration, as next in importance to the kitchen; it should be sufficiently roomy, open into both the dining-room and the kitchen, and in order to "save steps," should be as convenient to the range or cooking stove, as circumstances will allow. The accompanying engraving represents a portion of the interior of a pantry that has been found to be convenient, as it allows the articles in common use to be got at handily, while those in less frequent demand are kept free from dust. The window is situated near one corner, and the shelves are so arranged, as to not obstruct the light from it. The shelves, *B*, *B*, 2½ feet from the floor, are 2 feet or more in width, and project about 3 inches beyond the closets and drawers below; these are used for molding and preparing pastry, and such other work, as may be most conveniently done here. The shelves at the left of the window are for the china and other table furniture in every-day use. Hooks should be placed upon the wall at the right of the window, for such articles as are required in the work done on the bench. The pantry is fitted up with an abundance of drawers and closets, of which it is hardly possible to have too many; the upper closets are for the nicer china and glass, while the lower ones serve to hold pans and other cooking utensils in less frequent use. The drawers are for table-linen, and the many uses the housekeeper will find for them. If possible, the window should be on the north side, but in any case it should have blinds for shade, and a wire gauze or other screen to keep out flies.

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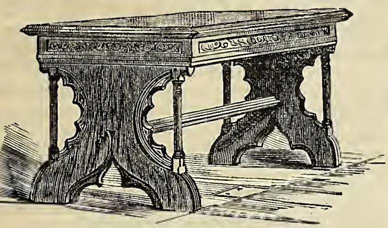
"Eastlake Furniture."—"Mrs. A. T. C.," Ingham Co., Mich., sees occasional references in papers and magazines to "Eastlake Furniture," and would like to know about it. Within a few years there has been a tendency to reform the style of house-furnishing in England, to substitute solidity for sham, and real excellence for show. Fortunately this reform has extended to this country, and nowhere is it more needed, as nothing can be in worse taste and more unhome-like than the gaudy fittings and furnishings of the homes of some of our wealthy people. As Mr. Charles Eastlake is one of the prominent advocates of this sensible movement, and has written a book on the subject, his name has become intimately associated with it, and the makers of furniture, etc., commend their wares by calling them in "Eastlake style," or "Eastlake patterns." In our modern furniture, a table for example, we have a foundation of pine, put together mostly with glue; this is covered with a thin veneer of mahogany, walnut, or other wood, and ornamented with carvings, which may mean something or nothing, and which are glued to the work. In a few years the pine framework warps and shrinks out of shape, the veneer peels, the carving gets chipped, and the whole becomes "shabby genteel." Eastlake and his associates would have the table *honest*, and be throughout what it appears to be on the surface, hence the table is made solid; if a costly wood can be afforded—well; if not, take a cheaper wood, but let the table be just what it pretends to be; if braces or bars are needed for strength, let these show, and indicate why they are used; and if ornament is desirable, let it be worked in the material, and not glued on. A table of this kind will *last*, and may serve for several generations. Finding that our ancestors of a few centuries ago understood the matter of furniture better than our cabinet makers of the present, Eastlake and the others reproduce many of the styles of by-gone times, and with some dealers "Eastlake" is used for antique. But the matter does not depend so much upon antiquity of style, as solidity, honesty, and appropriateness. To illustrate the matter, which we can not treat more in full at present, though heartily in favor of the reform, we give an engraving of a table which a furniture dealer would call an "Eastlake pattern."


AN "EASTLAKE" TABLE.

Household Notes and Tested Recipes.

Buckwheat Cakes.—"Mrs. B. S." is troubled because her cakes will not brown. The addition of a little molasses will remedy the trouble—try a table-spoonful to a quart of batter. Much depends upon the cooking. Many have the griddle too cool, and the cakes are dried rather than cooked. It is useless to expect light and good cakes unless the griddle is hot enough to puff them up at once.

What is a Salmi?—"Mrs. W. J." The regular "salmi" of French cookery, is a sort of stew made from the remains of game. The meat is all carefully cut from the bones, and these are pounded into small bits and cooked to make a gravy or sauce. The bones are strained out, the sauce variously seasoned—usually wine added—and then the bits of meat warmed up in it. In our restaurants a very indefinite mixture, and a not very delicate one, is served under the high sounding name of salmi. If you made it at home, you would call it a stew or a hash, as there was more or less gravy with it. Very good it is when properly made at home, and served on slices of toast as a breakfast dish.

Croquettes—Rice ditto.—"Mrs. M. E. B." There is no reason why any housekeeper (or other) should be "almost ashamed to ask" about anything that she does not know. If your neighbor calls this article of cookery a *kro-kay*, she is wrong. That is the proper pronunciation of *Croquet*, the game, but according to the rules of French pronunciation, the final *e* in *Croquette* causes the *t* to have its full sound, and the name is *kro-ket*.—To make them of rice. The rice may be boiled for the purpose, or cold boiled rice may be used. To two cupfuls of this add three well beaten eggs, and work together; if not sufficiently adhesive to make into rolls, add a little flour, but only enough to make the rice stick together; season with salt; make into rolls, or mold, roll in flour, dip in egg and powdered cracker, and fry, as directed last month on page 48. These are intended to be served at dinner, in place of vegetables. If wished for dessert—and they make an excellent one—add to the above quantity two table-spoonfuls of powdered sugar, and flavor with extract of lemon, vanilla, or whatever may be preferred. Sift fine sugar on them when served; some use a sweet sauce.

An Apple Meringue.—This is a delicate, quite showy dish, easy to make, and good when it is done. It needs good apples, that is, those with a sprightly flavor; pare, quarter, and remove the cores; stew in a bright tin or enameled sauce-pan, with sugar to taste, and a little cinnamon; as soon as the apples are done through, having kept the quarters as whole as possible, turn them into a pudding-dish, being careful not to break them up. While the apples are cooking, get the meringue (pronounce it always *mee-rang*) ready. For a moderate sized dish, use the whites of four eggs, beaten to a firm froth, four ounces of sugar, and flavor with lemon; spread this over the apples in the dish, set the dish in the oven, and bake until the surface is well and evenly browned. Serve hot for dessert, but some prefer to let it get cold and eat it with cream.

To Prepare Squash for Pies.—[The following comes from "B. L. J.," Burlington Co. The method is well suited to the Hubbard and other hard-shelled, long keeping squashes, and is equally useful for preparing squash for the table. Ed.] My plan is to saw a squash in half, clean out the seeds, etc., then place open end down in a pan containing an inch or so of boiling water, placing small slips of wood or thick wire underneath them, so that the edge will not burn on the pan. Let it steam until thoroughly tender. The flesh of the squash is then easily scraped out with a spoon, and run through a colander, if thought desirable, though it is not necessary, there being no hard lumps in it. By this plan none of the aroma of the squash is lost, while it greatly reduces the labor of preparation. Another plan is to take the two halves after cleaning from seeds, etc., join them together, and bind firmly with twine, and place in the oven to bake until tender. There is little, if any difference in the result, but I give the preference to the first method as being much the easiest.

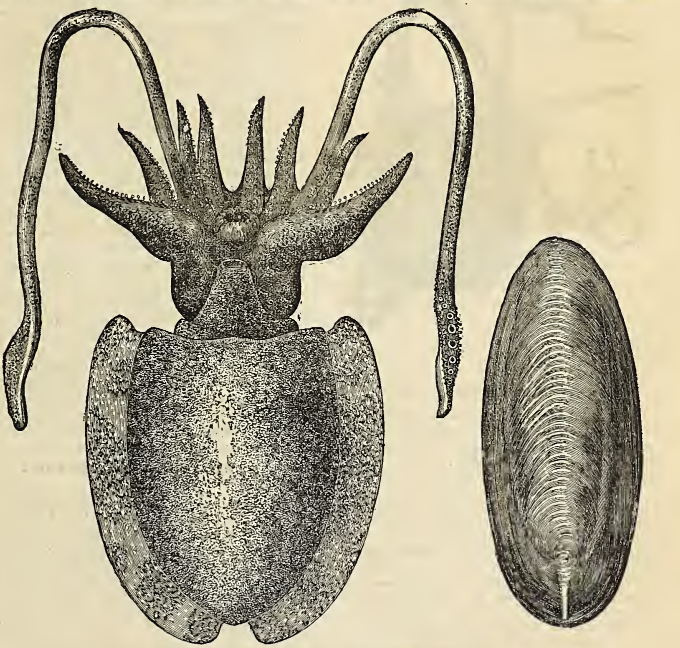
BOYS & GIRLS' COLUMNS.

The Doctor's Correspondence.

"Alice" writes that she would like to know about

THE CUTTLE-FISH

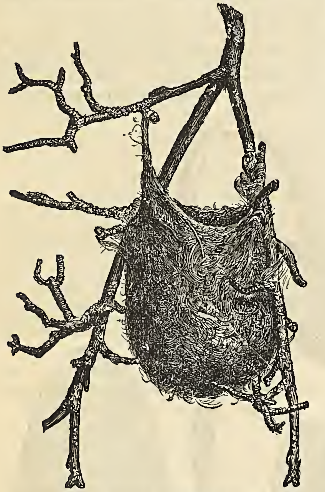
which she gives to her canary bird; she evidently thinks, as do many others, that it is some kind of a dried fish. In the stores it is called Cuttle-fish bone, but it is not properly a bone, but it is really the shell of the cuttle, fish, and when I tell you that the cuttle-fish is not a fish, you will begin to think that the names are very much mixed. The cuttle-fish is closely related to the animals usually called "shell-fish," such as clams, oysters, mussels, and the like; indeed it belongs to a division of these, which have long feelers, or bodies that help them to move about, arranged on their head, hence the class of animals is called *cephalopods*—a rather big word for youngsters—but when you know that it is from the Greek words for *head* and *foot*, and that it describes the peculiar form of these animals, it will perhaps not seem too big a word. The naturalists call the cuttle-fish *Sepia*, and there are 30 or more different kinds found in the sea, in all parts of the world; the portrait of the cuttle-fish here shown will give you a better idea of how they look than a long description. You see that it has a bag-like body, with a sort of wing on each side; the round place near the top is the mouth, and around this are 10 arms or feet, of which two are much longer than the rest, and all have little suckers upon them, which allow the animal


THE CUTTLE-FISH AND CUTTLE-FISH BONE.

to hold very fast to anything it catches, or to a rock if it wishes. The cuttle-fish has a shell to strengthen its soft body, but strangely enough, carries it inside; and this shell is what is known as cuttle-fish bone. It is very light indeed, and if you examine it carefully you will see that it is made up of the most delicate little plates of bony matter. The cuttle-fishes walk along on the bottom by their many feet or feelers, and when they swim they go backwards. Their swimming is done in a very droll manner, they take water into their bodies, and send it out in a stream with great force, and thus push themselves, hind foremost, through the water. Another strange thing about them is, that they always carry a bag of ink with them, and when chased by a large fish, they throw out some of this inky matter, and so cloud the water that their enemy can not see them. This coloring matter, dried and made into cakes, is called sepia, and is used in making water-color drawings; it has a fine, rich, brown tint. The cuttle-fish bone of the shops is mostly picked up on the shores of the Mediterranean sea, where it washes ashore from the animals which die, or which are killed by their enemies. The cuttle-bone is put into bird cages because the birds like to rub their bills against some such substance, and being, like other shells, mostly composed of lime, it furnishes them with this, which, like all other birds, they need to form the shells to their eggs. The powdered bone is sometimes used for tooth-powder, and it has been used to polish metals. The bone at the right hand of the engraving is about half the usual size; but there is a cuttle-fish in the China seas that has a bone a foot and a half long. .... I am always glad when parents take an interest in these boys and girls columns, as many of them do. The mother of some of our boys and girls sends me

THE NEST OF A BALTIMORE ORIOLE,

and I give an engraving here, to show you what it is like. No doubt that most of you, who live in the country, know the bird, and from the way in which it hangs its bag-like nest, you know it as the "Hang-bird." It is one of our most brilliant birds, being orange and black in color, and it is sometimes called the "Golden Robin." Its nest is often seen hung to the ends of the slender branches of some tall tree. I am always glad when I see one of these nests, to know that it is beyond the reach of thoughtless boys, and rascally cats, as it is put where neither can get at it. The bird is a very useful one, as it is very fond of caterpillars. But it is the nest rather than the bird that I would now talk about. The nest is built of any stringy bark, strings, tow, wool, coarse grass, or any strong materials the bird can get. The bark of several of our large herbs, such as the milk-weed, is very strong, like flax, and this the bird uses especially for fastening the nest to the twigs of the tree. It works as if it knew that this part must support the whole weight of the nest, eggs, and young, besides its own, and puts here the very strongest stuff it can find. The pair who built this nest, for both birds work at it, were very lucky, they had found a strong cord or twine, several feet, if not yards long, which was used for fastening the nest to the tree, and most curiously was it made fast. The string being long, after it had served to secure the nest properly, was carried all through the nest, the same string running around in various directions, and woven in and out, in a manner that looked as if they meant to make the best use of the precious string, as no doubt they did. We thank the lady for the nest, as it is a real curiosity. I hope if any of you see the orioles next spring—they come around early in May—that you will recollect this nest, and put an abundance of bits of waste string, and narrow strips of cloth, where the birds will find them, and you may be sure that they will be worked into the nest. We cultivate so much land, that the materials the orioles need for building are becoming scarce, and it is only fair that we should give them strings and such things for their nests, to pay for the good they do in keeping the caterpillars from injuring the fruit trees.



AN ORIOLE OR HANG-BIRD'S NEST.

ANOTHER CHRYSALIS

comes from Master Paul, at Rome, Ga.; he is only 8 years old, yet notices insects, and gets his father to send a specimen he has found, and to write asking what it is, "and what it will make." It is the chrysalis or cocoon of the Cecropia moth; it was a large green caterpillar, with large red and yellow warts that have black bristles on them; it lives on apple and other trees, and in September goes to bed for the winter in the shape in which you found it. Had you kept this in the house until spring, you would have been surprised some day, to find a very large moth—perhaps you would call it butterfly—and the cocoon empty. You would find it difficult to believe that so large a fellow, with its wings spreading six inches, could have come out of so small a place. The wings are folded up very closely, and it takes the moth, when it first comes out, a long time to stretch and dry its wings. If Paul finds another he can put it away in a cool room and forget all about it, until the appearance of the moth reminds him of it.....Some of the many questions do not admit of a simple and brief answer. For instance, here is a letter from one boy who asks me to tell him

HOW TO SHOOT ON THE WING.

Now this could not be told in a single long article, nor would the telling be of use without practice. I have done very little shooting of late years, and only know that it is something to be learned by practice. You know that though a bullet, for instance, moves very rapidly, it takes time in going, say 50 yards; though it may *seem* instantaneous, the time can be measured by proper instruments. Suppose that the bullet were fired at a bird flying at right angles to the line of the shot, if aim be taken directly at the bird, the time between the pulling of the trigger, the explosion of the cap, the burning of the powder, and the travel of the ball to the point aimed at, would be sufficient to allow the bird to move several feet, and the ball would pass some distance to its rear; though shot would scatter some, the result would be the same as with a bullet. Aiming directly at the bird on the wing will not answer. The sportsman shows his skill by aiming at a point ahead of the bird, and just so far ahead of it that by the time the shot reaches the spot the bird will be there. Of course if a mathematician knew the rate of the flight of the bird, and the rapidity of the shot, and the distance, he could calculate to a hair the point to be aimed at in order to hit the bird; the sportsman learns this by practice. I do not care, as a general thing, to encourage boys in shooting, but it is a matter that all depends upon where one lives, and the wishes of the boy's parents. In some localities it is very necessary for boys to know all about the use of fire-arms, not only for defense, but as a help in supporting the family. But for those boys who go around with guns, *shooting at*—I don't say shooting—everything that flies, from a crow to a butterfly, I have a great dislike. If my young friend wishes to study up the matter, he will find in our book-list a work, "Shooting on the Wing," which gives all that can be told in print, but the subject is not one suited to the Boys and Girls, nor is it sufficiently agricultural to occupy much space in the other pages

Aunt Sue's Puzzle-Box.

SYNCOPATIONS.

1. Syncopate a tree and leave an article of food.
2. Syncopate an article of food and leave a nail.
3. Syncopate a string and leave a fish.
4. Syncopate a gem and leave a loud noise.
5. Syncopate a small river and leave a motive power.
6. Syncopate an animal and leave an article of clothing.
7. Syncopate a measure of surface and leave a measure of length.
8. Syncopate a measure of surface and leave a unit.

Isola.

DOUBLE ACROSTICS.

1.—1. A nut. 2. A flower. 3. A city in New Jersey. 4. Contrary. 5. A city in Africa. 6. A preposition.

Primals give a large country and the finals give a city in the United States.

12 Years.

2.—1. Resembling the Jacobins. 2. A tool. 3. A republic of South America. 4. A book of faith. 5. A fish. 6. A river. 7. A number.

The primals name a President of the United States, and the finals a Vice-president.

John W. Wheatley.

NUMERICAL ENIGMA.

I am composed of just the number of letters of Aunt Sue's post-office box in Brooklyn, N. Y., and that is 111 (one hundred and eleven).

My 42, 102, 45, 22, can never be used unless connected with a 63, 65, 108, 79, 28.

My 41, 25, 73, 39, is something used at camp-meetings to protect from 95, 43, 20, 47.

My 107, 96, 94, 70, 72, 13, is often put upon my 24, 90, 53, 30, 99, 38, 87, 88, in jail.

My 61, 92, 40, 52, is used to 26, 89, 62, 91, 57, 4, the ground with in spring.

My 79, 77, 54, 104, 51, 66, 2, is the man who said he preferred 98, 50, 36, 3, 10, 16, to riches.

My 81, 84, 32, 31, 48, 103, 23, is a very large city in my 91, 111, 56, 100, 27, 105, 70, 75, 1, 18, 64, 36.

My 11, 58, 55, 44, and 68, 59, 76, 92, are the same four letters, transposed, making two different words which mean about the same thing.

Many Christians 29, 106, 61, 93, for 101, 84, 8, 67, 72, 21.

A few years ago people used my 23, 21, 15, 14, 35, 60, 109, when they entered my 71, 110, 37, 85, 93.

My 7, 12, 74, 34, 6, 19, 36,—80, 78, 82—86, 33, 97, 17, 79, should be dear to all 49, 5, 74, 69, 8, 85.

My 83, 44, 8, 46, is what you never saw a live person without.

My whole is a promise that has been made to every one that shall overcome.

Meda.

ANAGRAMS.

1. Teach men scorn.
2. Cool in turret.
3. A crib coat.
4. Ruin a Gaul.
5. Unum after ears.
6. Vital courts.
7. Shove cur.
8. Coil screen.
9. I entreat pert Ned.
10. O! pinch dame!

PUZZLE.

Take half of a lion and half of a hand,
And then please add half of a zone,
And the letters will show (if correctly they stand)
A city that's very well known.

POSITIVES AND COMPARATIVES.

(*Example.* A story: a workman. Ans. Tale, tailor.)

1. What the children love: what the flowers love.
2. What the goat does: what the farmer sells.
3. An article of jewelry: something used in the laundry.
4. A poem: a perfume.
5. An animal: to reel.
6. What the rivers do: what may grow by the river's brink.

Bessie.

PUZZLE.

Write six names, one below the other, each containing six letters (three boys' names and three girls' names), so that another boy's name shall appear in the diagonal letters, reading from the left upper corner to the right lower corner.

Belle.

ANSWERS TO PUZZLES IN THE JANUARY NUMBER.

Geographical Enigma.—Philadelphia in Pennsylvania.

Metagram.—Scowl, cowl, owl. Scow, cow, Co.

Puzzle.—Pineapple (p—ine—ap—pl—e).

Cross Word.—The Doctor's Talk.

Blank Decapitations.—1. Hailed, ailed. 2. Howl, owl. 3. Flight, light. 4. Fit, it. 5. Fold, old. 6. Height, eight.

Square Word.

P A P A W
A Z O T E
P O L A R
A T A P S
W E R S T

Diamond Puzzle.

M
F A T
F I N I S
M A N A T U S
T I T H E
S U E
S

Thanks for puzzles, letters, etc., to A. F. G., Emmie, B. T., Snip, Ben, Jo Kose, S. S. W., B. L. A., J. T. G., Wun Moore, Mary Gold, and to F. Mill (or Min).

* * *

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Amusement for Boys.

Our friend, Mr. Snook, sends a couple of little matters, which will no doubt afford amusement to some of our youngsters. Probably most of you have seen

A Curious Dart, shown in figure 1, which is easily made, and may afford much amusement. The shaft is a stick about the size and length of a common lead-pencil.

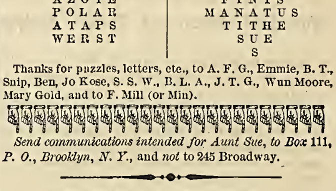


Fig. 1.—DART. Fig. 2.—HOW TO FOLD THE PAPER.

A large pin with the head cut off, or a piece of wire, is fixed in at one end, while the other end is split at right angles, to receive the folded paper, as shown in figure 2 The paper, a square piece of writing paper, is folded in halves in two directions, then turned over and folded from corner to corner, as shown by the black and dotted lines in figure 2. A single trial will show that it is very easy. The folded paper is placed in the slits, and the dart is ready. If you throw it, paper end down, as hard as you please, you will find that the pin will always stick in the floor, and if you throw it at a board set up as a mark, whether you start it sidewise or endwise, it will reach it pointed end first. By setting up a target, you can soon learn to hit the bull's eye every time. *Caution*—with this, as with arrows, and everything of the kind, take the greatest care against accidents. The mark should always be where there can be no danger, and never where a person may come upon it unexpectedly. If you learn to observe proper care in using such things as these, it will not be so difficult should you ever have a gun.

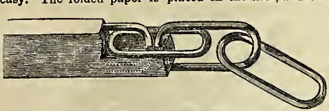


Fig. 3.—MAKING A WOODEN CHAIN.

A Wooden Chain, many, after trying to find where the links were joined together, have been surprised when told that the chain, with its links within one another, has been wittled from a single solid piece of wood. If you examine the chain, with its links all moving freely, it looks as if the cutting were a very difficult matter, while really, one with a sharp knife, and a moderate amount of skill in the Yankee accomplishment of whittling, can succeed in making a simple chain, especially if he has the engraving, fig. 3, to help him. Any easily cut wood will answer, and a piece 1¼ or 1½ inch square, and 6 to 12 inches long, is the best size to begin with. The position of the links is shown in the engraving, and you can see from that what wood will have to be cut away in order to set them free. A considerable cutting may be saved by the use of a fine saw. Let us suppose that the links of the chain are to be two inches long. You measure off two-inch spaces on one side of the stick, and with a fine saw cut the stick a little more than one-quarter of the way through; you then turn the stick and make other cuts exactly opposite to these, leaving an uncut portion in the center as wide as the links of the chain are to be thick. The sides may also be sawed in a similar manner, with cuts just half way between, and at right angles with these. When you have cut a link, you will see just where the saw can be of use. Sailors, prisoners, and others who have much leisure time, sometimes cut chains with very elaborate things at the ends. Select clear-grained, quite soft, rather tough wood, have a very sharp knife, and always *think before you cut*, as a mistake, once made, can not be easily repaired.

Feeding the Birds.

[This note comes from "J. H. P.," of Franklin, New Jersey, who, I judge, is by no means a boy, but as he tells what boys and girls will like to know, we welcome him to our columns, and hope he will come again. Wishing to know in what part of the State J. H. P. lived, I looked in the latest Gazetteer, and found that there are no less than *six* Franklins, in as many different counties in N. J. The good people who named these towns must have been great admirers of Franklin, or they must have had a small stock of names on hand.—The Doctor.]

Perhaps the Doctor is not aware, and probably few of his young readers know, that *pumpkin seeds* are the most acceptable feed for Chickadees during the winter. They prefer them even to meat. For a number of years I have fed my four Chickadees on pumpkin seeds, of which I always save several quarts expressly for them. I put the seeds, a small handful at a time, in a half-pint tin cup, and set the cup on the window-sill. In the morning, as soon as day-break, a Chickadee alights upon the edge of the cup, utters his "teet-teet" of thanks, looks in at the window a moment, and jumps down into the cup; he takes a seed, hops out, and flies to the nearest tree to eat his breakfast. Another bird immediately takes his place, until all four have had their breakfasts. Thus, almost every hour in the day, from December to May, and sometimes to June, the Chickadees delight us with their presence. They become very tame, so much so as to peck at one's finger held against the glass. Once I put out my hand and rubbed one on the breast several times before it took wing. If your young readers would feed the Chickadees pumpkin seeds and meat on the window-sill, it would furnish them a great deal of amusement. The Nuthatch, and the small Red-headed Woodpecker, are less tame. For these I hang up half-picked bones, by means of a string, to a limb of a tree, a few feet from the window. The Chickadee manages a pumpkin seed, which you know is quite a large seed, in one of two ways: he either grasps each end of the seed with his claws, and a small twig at the same time, and pecks upon the middle of the seed until he has made a hole through the shell, or he thrusts the seed, point first, into a crack of a board, or under the rough bark of a tree, hammering it down well to make it secure, and then proceeds to break up the rim of the seed. Sometimes, when too liberally fed, the Chickadees get mischievous and throw out every seed in the cup, eating only the plumpest ones. The rest, however, are not wasted, as they pick them up afterwards. It is amusing to see them stand on the window-sill and watch the people within, as they are at their various occupations. In May or June, they generally leave for the woods, but return, occasionally, during the summer and search through all the trees in the door-yard for "worms" or caterpillars.

Aunt Sue's Chats.

Mattie.—You must mean a card-*rack*. I can give you the "pattern of one," which you can vary to suit yourself. Cut two pieces of perforated cardboard of the shape of figure 3, and one of figure 2. The small dots put at the sides of the square edges indicate the number of holes in the cardboard at the places designated. Work the pattern given with any colored worsted you please, and stick some pretty little picture in the center of figure 2, when finished. Work the two pieces (fig. 3) only in the squares surrounded by a thick line. Figure 3 is to be made exactly the same size as figure 2, with the addition of the piece at the base. The small dots on figure 3 show where a few sly stitches are to fasten the pieces together, as in figure 1. Ornament with small tassels, and attach cord and tassels to the top by which to hang it.

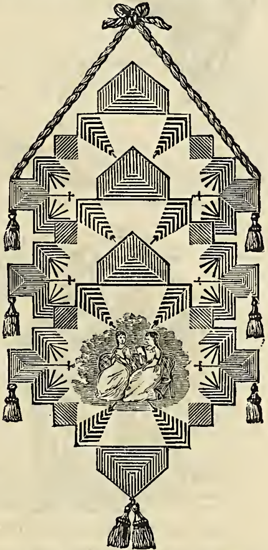


Fig. 1.—THE CARD-RACK COMPLETE.

B. F. T.—The *Baltimore Oriole* inhabits North America from Canada to Mexico, and is not especially "a native of Maryland." According to Catesby, it takes its name from its colors, black and orange, being those of the arms or livery of Lord Baltimore, formerly proprietary and one of the first settlers of Maryland.

E. L. R.—It is of no use trying to make those "little rolls," unless you have a brick oven. If you have the latter, then make very light dough, pat your rolls into the shape required, and make a deep indentation down the center with the back of a knife, put them on sheets of tin and bake quickly. You can get patterns for tidies to be worked on "Java canvas" at almost any worsted-store. You will find a tidy made of *rag-rosettes* described in the *American Agriculturist* for April, 1876.

M. A. C.—I never attempt to "make house-plants blossom in the winter." I am satisfied if I can keep them alive. So I sent your letter to "The Doctor," and he writes as follows: "If I were to ask Miss Minnie, 'what is good in case of sickness?' she would at once ask 'what sickness?'—So, before I can answer our young friend, I must know *what plants*. It is quite generally supposed that it is the business of plants to bloom all the time, while there are some plants which only bloom once, and are done with it for the year, there are others which will bloom oftener, if they have a rest between whiles. It depends so much upon the kind of plant, and what it has been doing heretofore, that it is impossible to give any but the most general directions. Let Miss Minnie shower her plants, at least once a week, setting them in a sink or bath-tub, and giving a good sprinkling. Water only when the soil seems a little dry, and never keep the earth soaking wet; give them a plenty of sun-light, and air on mild days, by opening another window, so that cold winds will not come directly on the plants, and she will do all that can be done to 'make' them bloom. Some can't be made to flower, and ought not to be."

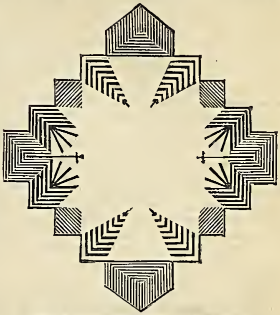


Fig. 2.—PORTION OF CARD-RACK.

Mary L. B. says "will you please help us to a solution of the accompanying riddle, said to be by Oliver W. Holmes, as we can't, any of us, make it out?"

"I'm going to blank," with failing breath,
  The falling gladiator said;
Unconquered, he "consents to death;"
  One gasp—the hero-soul has fled.
"I'm going to blank," the schoolboy cried;
  Two sugared sweets his hands display—
Like snow-flakes in the ocean tide
  They vanish, melted both away.
Tell with one verb, or I'll tell you,
What each was just about to do.

I presume that the falling gladiator was going to *succumb*, and the schoolboy, too, was going to *suck 'em.*

Will the person who sent me the (Napoleon) "natural curiosity," please send me her address, that I may return the picture, as requested?

K. D. E.—Thanks for your budget of puzzles. Certainly, you "may send anagrams." I "do not give prizes now," because the plan evoked a great deal of grumbling from many who failed to win them, and because I concluded that the best motives for studying the puzzles, was the pleasure and instruction to be gained therefrom.

The Story of Three Little Boys and Their Big Snow Ball.

Illustrated by our Special Artist.

There were three of the boys, names Joe, Bill, and Jack; they lived in a house set a little way back from the main country road, which in winter, you know, is apt to be pretty well covered with snow. These three little boys of course made it a rule, to set off betimes on their way to the school. The school-house, it stood, as some school-houses will, a long distance off on the top of a hill. One bright winter's day, I've forgotten the date, each boy started off with his book and his slate; each had in his pocket an apple to munch, along with a dough-

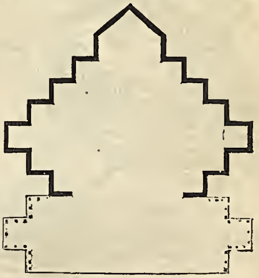


Fig. 3.—PORTION OF CARD-RACK.

nut, to make out a lunch. "Hold on, boys," said Joe, "let us now have some fun, there's a plenty of time, school hasn't begun, lets make a big snow-ball."—"Just so," agreed Bill, "but hold on, till we get to the top of the hill." Joe made a ball as big as an orange or, may be as large as a pewter porringer. He rolled it along on moist, sticky snow; it grew and grew bigger, my! how it did grow! As big as the head of Jack, the fat bumpkin, it quickly outstripped a premium pumpkin. All three of the boys pushed the ball with a will, and rolled it at last to the brow of the hill.—"Now, boys, let her go. Let her go now," said Jack, who stood at one side, safely out of the track. They did "let her go," and it down the hill flew, and the farther it went the bigger it grew. As it went on its way, some strange things befell; just what things did happen, the pictures will tell. Farmer Jones had a pig, about a year old, which, like Hamlet's pa's ghost, a tail could unfold. The snow was so deep, piggy stepped from his pen, and was taking a bit of a walk just when Jack said, "let her go," to Joe and to Bill, and the ball had begun its journey down hill. They shouted and screamed at the quick rise in pork, and thought 'twas the whole of their mischievous work, so they all went into the school rather late, and left the poor pig and the ball to their fate.

1.—HOW THE SNOWBALL BEGAN.

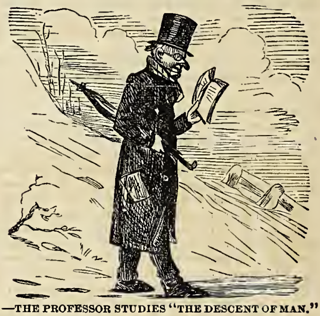
2.—HOW THE BALL GREW LARGER.

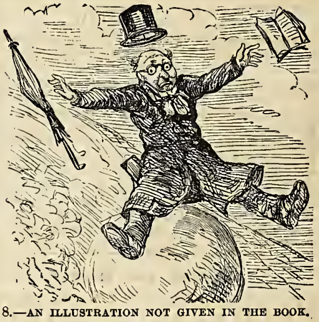
3.—THE BALL READY TO "LET GO."

4.—AND WHAT HAPPENED THEN.

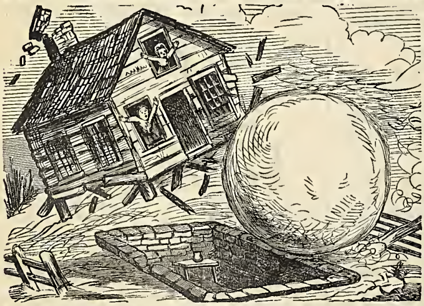
5.—MR. GRAY PERSUADES MISS SMITH.

6.—THE BALL ASTONISHES MR. GRAY.


7.—THE PROFESSOR STUDIES "THE DESCENT OF MAN."


8.—AN ILLUSTRATION NOT GIVEN IN THE BOOK.

What became of the pig, we really don't know; the ball, that kept on and continued to grow; it went on and on, away down the long hill, till it came to the place, close by the old mill, where Mehitable Smith met Mister Sam Gray; he asked her to ride with him in his new sleigh. She consented to go.—"I'm so proud," said Sam, "you need not smile so, for I really am. Why smilest thou, Hettie, come now, tell me all."—She told him the proverb of "pride" and its "fall,"—just then came along that remarkable ball. The truth of the proverb is plain to you all. The ball still went on in a business-like way, and highly disgusted was Mister Sam Gray. Professor Macalpin, the learned and wise, who knew by their names every star in the skies, had walked to the town three miles from the college, his hat on his head, his head full of knowledge. He had ordered a book, just fresh from the press, which came in that morning by Adams' Express. What was in his new book he much longed to know, so he read as he plodded home through the snow. Professor, what book do you eagerly scan? It was Darwin's latest, "The Descent of Man!"—Just see the astonishment shown in his look, while being taught something not down in the book.


9.—WHAT THE SNOWBALL WAS DOING WHEN LAST HEARD FROM.

10.—THE THREE LITTLE BOYS ENJOYING A SNOW BAWL.

The ball went on and on, down hill all the way, it had not yet done all its work for the day. Bad deeds, like chickens, always come home to roost. The young scamps who started the ball with a boost, ah! little they thought as they sat at their sums, from how small an acorn a big oak-tree comes, or how a snow-ball, that could upset a pig, might in rolling a mile become very big; which, though it at first could not injure a mouse, in time would be able to move off a house. Whose house did it move? Alas! 'twas no other, than that where these boys did live with their mother. The story is sad, full of weeping and woe, just how sad it is the pictures will show. School out, the boys started for home in great glee; they thought of the pig as a right jolly spree. When of their home they found only the cellar, they stood in a row; each mischievous fellow, set up a snow-bawl—oh! how they did bellow. *Moral.*—It has none.

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See adv't page 118. **Yours resp'y, F. H. CLARK.**

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Assorted best varieties, in colors of White, Carmine, Rose, Variegated, and Yellow. By mail, prepaid, 3 for 25c.; 6 for 50c.; 14 for $1.00. These are well rooted young plants, same as are sold in other catalogues at $2.50 per dozen.

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If you wish to make 100 to 200 per cent selling trees and plants, send to
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for their terms. Sent **free** to all.

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BLISS'S SELECT GARDEN SEEDS

FOUR GRAND PRIZE MEDALS Awarded our Exhibits at the Centennial.

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Coll. A—Contains twenty choice varieties of Annuals.	$1 00
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10 " " Double Balsams	1 00
12 " " German Stock	1 00
8 " " Pansies	1 00

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20 select varieties, 1 packet each	1 00
8 best varieties Cauliflower	1 00
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Amaryllis, 4 fine varieties	1 00
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Gladiolus Brenchleyensis, 25 bulbs	1 00
Tuberoses, 12 bulbs	1 00
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Japan Lilies, 5 varieties	1 00
Madeira Vines, 8 tubers	1 00
Tiger Flowers (Tigridia conchiflora), 8 bulbs	1 00
Collection Bulbs, 1 Tuberose, 1 Amaryllis, 1 Tigridia, 1 Caladium, 1 Madeira Vine, 1 Japan Lily	1 00

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No. 2—12 Verbenas, choice strain	1 00
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No. 9—1 Pansy, Violet, Cuphea, Heliotrope, Petunia	1 00
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The 12 collections for $10.00.

No changes can be made in any of the above collections.

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This superior variety is the result of a careful selection for successive years, of the best formed, largest, and deepest colored roots in the Imported Long Orange Carrot, by which it has attained a perfection hitherto unknown in this useful vegetable, being larger, better flavored, and of a deeper orange color, and more sure to produce a crop. Butter makers will find this variety very useful in giving to their butter a rich, deep yellow color. We unhesitatingly pronounce it the best variety in the market, and one which will not fail to give satisfaction to the purchaser. One ounce, 15 cts.; four ounces, 40 cts.; one lb., $1.25; 5 lbs., $5.00; by mail, post-paid.

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	Ounce.	*¼lb.*	*lb.*
Extra Early Red	$0.25	$0.75	$2.00
Early Red	15	50	1.50
Wethersfield Large Red	15	40	1.25
Danvers Yellow	15	50	1.50
Yellow Dutch	15	50	1.50
White Portugal	20	60	2.00
Early Cracker	20	75	2.50
Early Red Globe	20	75	2.50
Southport Red Globe	20	75	2.50
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In lots of 5 lbs. 25 cents per pound may be deducted.

The Earliest Tomato Known.

LITTLE GEM.

This new variety was raised by the originator of the Conqueror Tomato, heretofore considered the earliest in cultivation. The vines are of medium length, compact growth, and excessively loaded with bright red fruit of medium size, of round and uniform shape, varying from four to six inches in circumference, of superior flavor, either raw or cooked. Its bright glossy red color, uniform size, shape, and otherwise beautiful appearance, make a dish of LITTLE GEMS almost as tempting as a plate of strawberries. It may be relied upon to yield several pickings, a week or ten days earlier than any other variety.

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A complete assortment of Vegetable Seeds for one year's supply, for a large or small garden.

The following collections are made up in the most liberal manner, care being taken to give a sufficient quantity of all the finest varieties and most useful sorts of Vegetables required in the Kitchen Garden:

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For list of Seeds in these collections, see Catalogue.

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Packages of one qt., 30c., mailed to any address, post-paid, By express, per peck, $1.50; per bushel, $5.00.

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For sowing all kinds of small Garden Seeds, with accuracy and despatch. It is easily operated by a lady or a child of ordinary intelligence, with a little practice.

Its cost is trifling compared with the advantages resulting from its use. The saving in time and seeds will undoubtedly repay the outlay in the planting of a single week. Its construction is so simple, that it is not liable to get out of order. Descriptive Circulars mailed to all applicants.

PRICE $1.25 each. Sent by mail, post-paid to any address for $1.50. A liberal discount to agents.

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No. 1.—CENTENNIAL.

A seedling of the well-known Brownell's Beauty, crossed with the White Peach Blow. Shape, round, symmetrical, very handsome; skin, deep red; flesh, white, fine grain, of superior quality; medium early.

No. 2.—SUPERIOR.

Of the same parentage as the preceding. Tubers, oval, kidney-shaped; skin, very smooth, of a deep red color; eyes few and small; medium early; very productive, an excellent keeper—and retains its mealiness and fine table quality during the entire season.

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A cross between the well-known Jersey Peach Blow and the Excelsior, resembling the Peach Blow in appearance. In quality and earliness it far excels that variety, and will produce double the quantity.

Either of the above varieties will be mailed, post-paid, per lb., $1.00; 3 lbs. to one address, $2.50.

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ALPHA.

A very early variety; fit for the table ten or fifteen days before the Early Rose. Of medium size, clear white, with the slightest tinge of red about the eyes; flesh very white, fine-grained, dry, and of excellent flavor; quality, of the highest excellence. We can recommend this with the greatest confidence *as the very best early variety in cultivation.*

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A new red, kidney-shaped potato, from the Early Rose, hybridized with the White Peach Blow. The shape is oblong, slightly flattened, resembling that of the Early Rose. Eyes slightly sunken; flesh white, fine-grained, firm, and of excellent flavor. Tubers of medium size. The time of maturity is the same as that of the Early Rose, and it is equally productive.

PRICES OF ALPHA AND RUBY:

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For a full description of the above, with many other desirable varieties, see our Potato Catalogue.

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The extraordinary success which has attended Mr. Pringle in his attempts to improve this valuable esculent—which has resulted in the production of the **Snowflake** and **Alpha**, and last, though not least, the **Ruby**—has encouraged him to still greater efforts in his favorite pursuit of hybridization, and we have now the pleasure of offering a very choice strain of seed saved by him, which is the product of numerous hybridizations, variously operated, with every care during the past season, between the above named and many of the best new and old varieties in cultivation, both English and American, and includes every strain, which Mr. Pringle will himself sow the coming spring. Packets, 25 cents; 5 packets, $1.

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Parties wishing to obtain the **"True Conn. Broadleaf"**
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Can be supplied with a very superior article, viz.:

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The seed I offer is of the best quality, grown from pure stock, and are the varieties most largely grown in the Valley of the Connecticut. My **Gardener's Catalogue** and Price List of Select Vegetable and Farm Seeds for 1877, sent free to all applicants. Address

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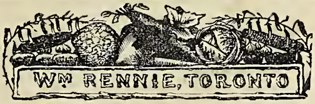

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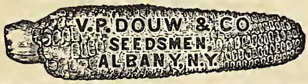

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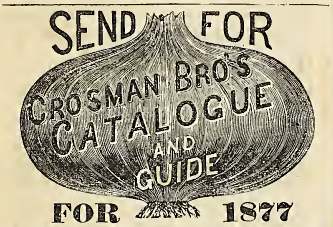

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Send Stamp for our NEW SEED CATALOGUE.

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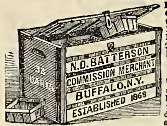

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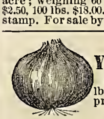

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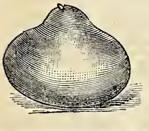

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Doolittle B. Cap Raspberry, early........	.50	1.00	8.00
Brandywine, bright red, hardy..	.50	1.25	10.00
Highland Hardy, bright red, early........	.50	1.25	10.00
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Kittatinny and Lawton, late sorts.....	.50	1.00	8.00
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By the 100, 1,000, or 10,000.

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Address **WASHBURN & CO.,**
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ANY GRADE of Fertilizer supplied in CONCENTRATED FORM at prices unprecedently low, based upon actual amount of ammonia, phosphoric acid and potash contained.

Prof. VILLE'S COMPLETE MANURE and fertilizers for special crops, Corn, Potatoes, Tobacco, Grain, Clover, Fruit Trees and Nursery stock, Hops, Lawns, Onions, Asparagus, Vegetable Garden, etc., will be furnished in a ready mixed state or in the form of the articles employed, viz., **Peruvian Guano, POTASH SALTS, Dried Blood or Meat,** and plaster—shipped in their separate and original packages.

No charge made for plaster necessary for preparation of formula. Any additional quantity of plaster, desired for reducing strength of formula, furnished at market rates.

We copy from our circular on formulas the following, which will illustrate our method of furnishing special formulas.

Prof. VILLE'S COMPLETE MANURE, (a substitute for barn-yard manure).

This formula contains:—

	Per 100 lbs.	Per 1,000 lbs.	Price per lb.	
Ammonia	7.69	76.90	17½c.	$13.45
Phosphoric Acid	5.00	50.00	9c.	4.50
Potash	7.59	75.90	7½c.	5.69
Cost per 1,000 lbs				$23.64

(Supplied in form of Peruvian Guano, Potash, Dried Flesh or Blood, and Plaster in original packages.)

This Complete Formula mixed with an equal weight of plaster or earth, will contain more plant food than found generally in a ton of average Commercial Fertilizer.

The POTATO FORMULA (Ville's) contains:—

	Per 100 lbs.	Per 1,000 lbs.	Price per lb.	
Ammonia	4.50	45.00	17½c.	7.87
Phosphoric Acid	5.97	59.70	9c.	5.37
Potash	13.64	136.40	7½c.	10.23
Cost per 1,000 lbs. (in original packages)				$23.47

Among the advantages of this plan of obtaining any desired fertilizer or fertilizing ingredients may be mentioned:

1st.—Saving in cost of at least **twenty-five** per cent. and upwards over commercial manures sold **by the ton** at current prices.

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3d.—Admits of any desired rotation of crops, or even continued, **one crop culture** without exhaustion of soil.

4th.—Deficiency in quality or quantity of barn-yard manure can be supplied, or any one or more ingredients required for **the compost heap,** furnished at will.

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8th.—All the materials furnished in these formulas, possess in themselves an established agricultural as well as a commercial value, and therefore, no risk or experiment is incurred in their use.

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have also been awarded the **Centennial Medal** and **Diploma**, and the *Medal* of the *Great Horticultural Exposition, held at Erfurt, Germany,* besides a large number of *First* Premiums at State and County Fairs. Full Descriptive Catalogue of our whole line of goods *free.* Including our *Wrought Frame Horse Hoe, "Iron Age" Cultivator, Paris Green Duster, Hand Garden Plow, Transplanting Hoes, Corn Knives, etc. Every Farmer* should have a copy, and we want **a live agent** at work, or a club formed in **every town.** Send for **new** terms.

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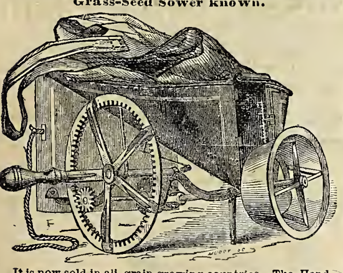
is the only practical Broadcast Grain and Grass-Seed Sower known.



It is now sold in all grain-growing countries. The Hand-Machine will sow 50 acres of wheat, or 30 acres of grass-seed in 10 hours, and do the work far better than it can be done by any other means whatever. These machines have been uniformly sold for the past 10 years for $10 a piece, but now we have reduced the price to $5 a piece, and our sales have already increased astonishingly. Send stamp for circular.

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Hand Cultivator sow and cultivate all kinds vegetables. Do work of 10 men. Best and cheapest. Price $12.50 combined.

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75 to 100 Bush. Shelled CORN per ACRE

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equally as good for other crops. These manures are made by Formulas originated by Levi Stockbridge, a practical farmer and Professor of Agriculture in the Massachusetts Agricultural College, and in 1876 were applied to over 4,000 acres with such success, that our best advertisement is to refer to farmers who used them. They are prepared for special crops, recognizing the fact that plants, like animals, differ, and require different food, or in different proportions, and must have it properly compounded to insure the best results. Four years of extensive trial in the field have proved beyond question that these manures are a **SAFE, SURE** and **CHEAP** mode of fertilization, **NOT** exhausting the soil, but leaving it richer by actual test.

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"We state what we sell and sell what we state."

Premium Pure, ODORLESS, Fine Ground RAW BONE, produces luxuriant grass. Sow now on land newly seeded. **Perfectly Inoffensive.** Very popular with Ladies and Gentlemen for house plants, **Lawns,** Gardens, and the Grapery. It never fails in producing grain crops. Send 20 cents for invaluable book, showing composition of cereal grains, and how to grow them. Address,

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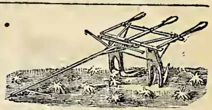

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Eggs are the most profitable product of the farm. Use "Imperial Egg Food." See adv't page 118.

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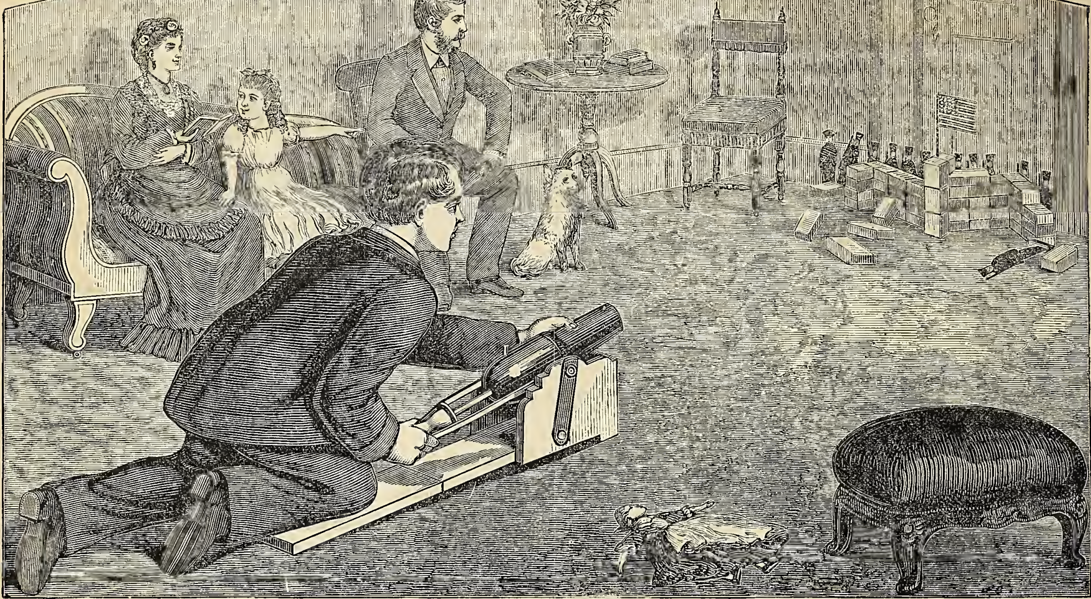

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☞ By an ingenious arrangement, the whole apparatus packs into a neat box, only 18 inches long, 6 inches high, and 8 inches wide,—easily set aside when not in use.—Rules, Illustrations of a variety of Forts, etc., accompany each box containing the set.

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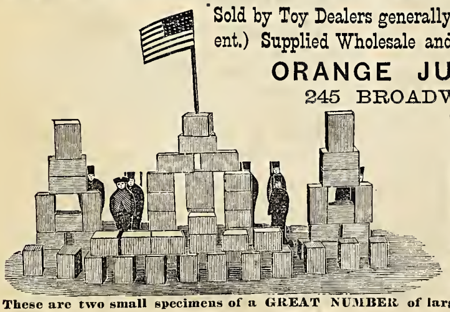

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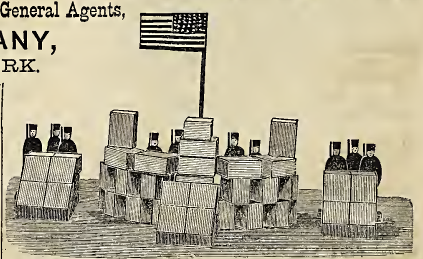

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Marks JET BLACK on prepared ZINC TAGS of four sizes. Used with any clean pen.

PRICE, 35 CENTS A BOTTLE.

Tags, 10, 15, 20, and 30 cents per doz. Liberal discount to dealers in quantity.

Boxes containing 4 doz. Tags, assorted sizes, pen, bottle of ink, 3 doz. plated wires, and emery paper. PRICE, $1.00.

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APPLE GRAFTS.

Will sell a few thousand Apple Grafts cheap, for cash, put up in the best manner. Also a general line of Nursery stock
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Strong Plants delivered *free of cost* safely per mail at your door. Satisfaction guaranteed. Splendid assortment of **ROSES**

6 for $1;
13 for $2. Send for *New Catalogue of Plants.*
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Cherry Hill Nurseries, West Chester, Pa.

One Strong Smilax Plant

Sent free by mail for 20 cts.; 6 for $1.00.

The following Catalogues will be sent on application as follows: Nos 1 and 2 on receipt of 10 cents each. Nos. 3, 4, 5, and 6 free.

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A Fowl to lay well must be in the best possible condition. "Imperial Egg Food" insures this.
See adv't page 118.

FOUST'S HAY LOADER.—A perfect machine for rapidly pitching hay, barley, and all loose grain on the wagon, in the field. Increased success in the harvest of 1876. Received the highest and only award for Hay Loader, with Diploma of Merit at Centennial Exposition, based on field trial. Thousands in successful operation. Manufactured by STRATTON & CULLUM, Meadville, Pa. Send for circulars early. See *American Agriculturist* for November, 1876.
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European Larch and Evergreen Seedlings; also Transplanted Evergreens. Better stock and lower prices, than ever before offered. Catalogue free. Send before purchasing elsewhere. D. HILL, Dundee, Kane Co., Ill.

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The "New Rochelle."

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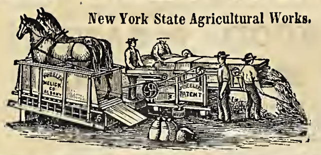

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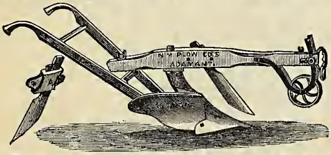

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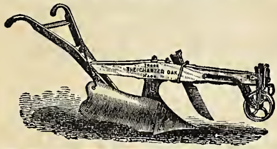

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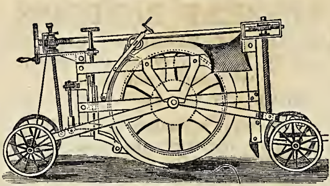

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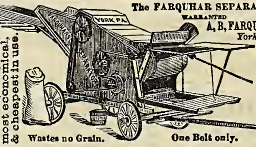

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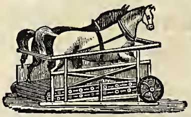

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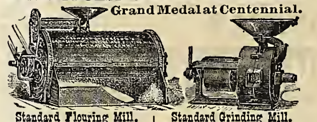

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Cleaner Grinder and Bolter.	For all substances wet or dry.
Ordinary size, 9 feet by 4 feet	Built of burr stone and iron.
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Finest flour, largest yields.	10,000 in operation.
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Runs at one-tenth the cost	Thickest French burr stones.
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Compact, practical,	Adjustable babbitt boxes.
Substantial, and very durable.	Solid self-adjusting burrs.

These Mills excel all others, even compared with those of double the size, double the weight, and double the price.

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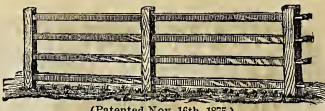

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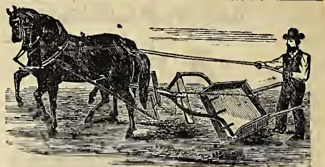

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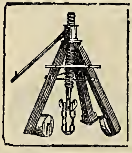

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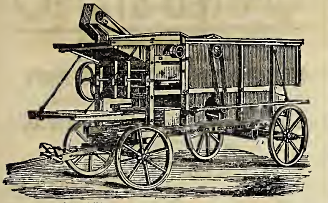

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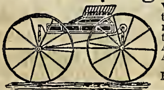

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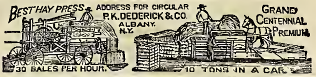
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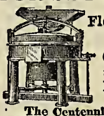

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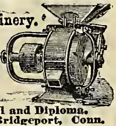

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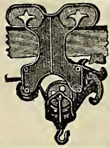

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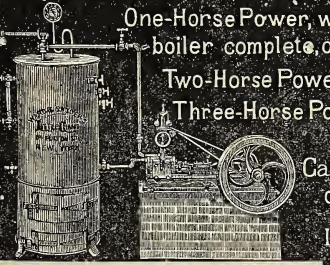

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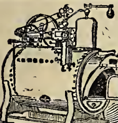

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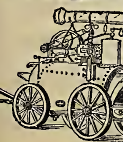

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In use over 25 years.
Removable Dasher.
Made of White Cedar with galvanized hoops.
Send for circular and prices.
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MR. A. W. CHEEVER, IN THE FARMER of Nov. 11, recommends all dairymen to use

Wells, Richardson & Co.'s
PERFECTED BUTTER COLOR.

He says:—"For all we can see, it is absolutely perfect. It should entirely supersede carrots for coloring butter, and also all the crude preparations of annotto as formerly put up by druggists."

It gives the exact shade of the best Jersey butter. It is pure, intense, economical, and has no taste or smell. It is an improvement on our "Golden Extract," being a combination of the bright yellow coloring principle of the Dandelion blossom, and it is greatly superior to carrots, etc., giving a better color, and no work.

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Every Dairyman who wishes to realize the highest price should give it a trial *now*. Address

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BUTTER COLOR, far superior to Auetto; does not make red or rancid like it, but gives Butter a Golden Yellow Natural Color. Awarded CENTENNIAL PRIZE MEDAL. For Sale by Country Stores and Druggists. Circulars free. A sample by mail, to color 50 lbs. of Butter, 15 Cts. Agents wanted. MRS. B. SMITH, 327 Arch St. Philada. Pa.

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Simple, efficient, and **always reliable.** No inside fixtures. 5 sizes made. Endorsed by leading Dairymen. Agents wanted where we have none. Send for circulars.
CORNISH & CURTIS,
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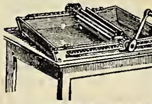

The most Effective, Simple and Convenient Yet Invented. **Works 30 lbs. in less than 5 minutes,** thoroughly working out the buttermilk and mixing in the salt. Send for circular and price lists.
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It has a **Purchase Gear,** which causes it to turn with half the labor that is required in turning other wringers. Satisfy yourself as to the merits of a *Purchase Gear* before buying any other wringer.
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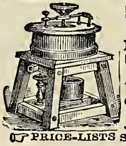

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Also, dealers in Bolting Cloths and General Mill Furnishing.
Office & Factory, 158 W. 2d St.
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☞ PRICE-LISTS SENT ON APPLICATION.

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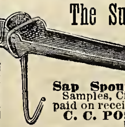

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Call for the EUREKA SAP SPOUTS at your Hardware Stores.

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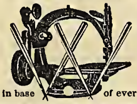

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Send Postal Card for Illustrated Price List, &c.
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For Invalids and Cripples.

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Please mention this paper.

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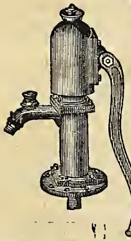
"UNIVERSAL FORCE PUMPS."

Date of Patent, Aug. 8th, 1876.



After six years endeavor to furnish the most reliable force pumps in the market, the above pumps are respectfully offered, as the best results, in my judgment, of the public requirements.

Their **adaptability, great power, careful finish** in detail, and consequent **economy**, will commend them. In case of accident, any part can be easily replaced, without sacrificing the whole pump. They can be immediately converted from **right** to **left-hand pumps**, by swiveling the air-chamber and handle to any required angle with the spout. They are changeable from lift to force pumps. Are for the house or for out-door wells of any depth, and having close tops, can not be tampered with.—**Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers. For hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

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The Most Complete System OF PHYSICAL EXERCISE Ever Devised for Home Practice.

100,000 in use by **men,** women and children.

Used standing, sitting or reclining.

Hundreds of **graceful** movements.

For home, office, schools, hospitals.

Price List.—No. 1, for Children 4 to 6 years, $1.00. No. 2, for Children 6 to 8, $1.10. No. 3, for Children 8 to 10, $1.20. No. 4, for Children 10 to 14, $1.30. No 5, for Ladies and Children 14 years and upwards, $1.40. No. 6, for Gentlemen of moderate strength, $1.50. No. 7, used by Ladies, Children or Gents, $2.00. No. 8, for Gentlemen of extra strength, $2.50. Full set, *family use,* 1 each, (1 to 6) Two 7's and Two 8's, $16.00. Nos. 7 and 8 are fitted with a screw-eye and hook to attach to the wall or floor. A pair of No. 7, ($4.00), or 8, ($5.00), make a complete Gymnasium and Health Lift. Sent post-paid on receipt of price. Exclusive Agencies granted in unoccupied territory.

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Send for Pamphlet of the Reliable Burlington Road.
Address, Land Commissioner, B. & M. R. R.
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Worth ten times its cost to every mother and family in Christendom. Sample box containing 3 cakes of 6 ozs. each, sent free to any address on receipt of 75 cents.
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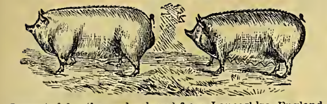

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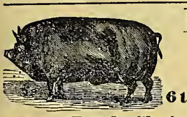

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One Sow	$30
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Sent immediately on receipt of order.

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The pigs will be ready to send off in May, when two months old.

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Pairs and trios not akin, and selected with special reference to their breeding.

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Fine Milch Cows always on hand.
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Black Bass for stocking ponds—**Pekin Ducks, Bronze Turkeys,** descended from a pair weighing 62 lbs. **Jersey Cattle,** A. I. C. C. R., and Cotswolds, at low prices. Address W. CLIFT, Mystic Bridge, Ct.

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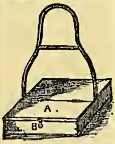

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The cheapest in market. Makes the most perfect brick. Tile Machines. Great variety. Prices reduced to suit the times.
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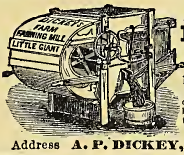

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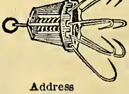

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A safe and ingenious device for catching fish, animals, game, &c. Sample, 50 cts., by mail, or send stamp for circular.
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CONDENSED STATEMENT

OF THE

Mutual Life Insurance Company OF NEW YORK.

F. S. WINSTON, PRESIDENT,

For the Year Ending December 31st, 1876.

Dr.	REVENUE	ACCOUNT.	Cr.
To balance from last account	$75,414,923 42	By paid Death and Endowment Claims	$4,459,458 52
" Premiums received	15,136,703 36	" " Annuities	24,611 49
" Interest and Rents	4,878,260 34	" " Dividends	3,701,700 34
		" " Surrendered Policies and Additions	6,319,785 21
		" " Commissions (payment of Current and extinguishment of future)	676,967 49
		" " Contingent Guarantee account	56,160 85
		" " Expenses and Taxes	664,302 35
		Balance to New Account	79,526,900 87
	$95,429,887 12		$95,429,887 12

Dr.	BALANCE	SHEET.	Cr.
To Reserve at four per cent.	$77,502,062 00	By Mortgages on Real Estate	$60,856,200 18
" Claims by Death, not yet due	610,750 00	" United States and State Bonds, etc.	12,673,569 33
" Premiums paid in advance	24,372 43	" Real Estate	4,246,245 40
" Contingent Guarantee Fund	654,842 59	" Cash in Banks and Trust Companies at interest	2,183,001 73
" Surplus for Division	3,568,161 57	" Interest accrued	1,322,294 16
		" Premiums deferred, quarterly and semi-annual	923,332 99
		" Premiums in transit, principally for Dec.	137,195 10
		Balances due by Agents	18,349 70
	$82,360,188 59		$82,360,188 59

Premiums deferred and in transit in the forcgoing Balance Sheet, have been subjected to a deduction of twenty-five per cent., by the Insurance Department, for the estimated cost of collecting the same. See Official Report below.

THE REPORT OF THE EXAMINATION

BY

THE INSURANCE DEPARTMENT.

Hon. Wm. Smyth,

Acting Superintendent New York Insurance Department;

In accordance with instructions received from you under appointment Number 363, I report the completion of the examination into the affairs of The Mutual Life Insurance Company of New York.

Made at a time when the annual investigation by the Trustees—as called for by the company's charter—was in progress, the work was considerably facilitated by each Department representative acting with one of the said Trustees, thus giving a double force with a check that was invaluable as to the correctness of the labor performed.

The valuations of the Policies in force have been made in the Department under the supervision of Mr. D. H. Keefer, our Actuary, and have occupied his attention with that of the rest of our actuarial force not engaged in New York.

The investments of the company, with other admissible assets, make a total of $82,076,706.87.

That the Company has been successfully managed is everywhere conceded; and it is very necessary that the custodians of this sacred trust fund should be men eminently competent to guard zealously the moneys that in the future afford the protection guaranteed by contracts with the holders of ninety-two thousand one hundred and twenty-five policies.

The Company does not need any other endorsement by the Department than is shown in the assets and liabilities enumerated below, exhibiting a surplus, as regards policy-holders, of $10,262,879.44.

A schedule giving in detail the information necessary for valuations of property, verification of title, &c., of each of the seven thousand one hundred and fifty-six (7,156) mortgages, has been compiled, and with a list of uncollected and deferred premiums is now on file in the Department.

The following was the condition of the Company on December 31st, 1876:

ASSETS.

Real estate			$4,246,245 40
Bonds and mortgages			60,856,200 18
Stocks and Bonds.	*Par Value.*	*Market Value.*	
U. S. bonds, registered	$7,473,550	$7,907,340 62	
New York City bonds, registered	2,405,000	2,412,587 50	
Boston Water bonds, registered	500,000	556,250 00	
Providence, R. I., bonds, registered	500,000	537,500 00	
Cherry Valley Town bonds	50,000	50,000 00	
City of Yonkers bonds	118,000	128,250 00	
Buffalo City bonds	140,500	145,417 50	
Elmira City bonds	56,000	57,435 00	
Missouri State bonds	215,000	225,025 00	
San Francisco bonds	590,000	637,528 71	
Union Co., N. J., bonds	14,000	14,735 00	
Plainfield, N. J., bonds	1,500	1,500 00	
	$12,063,550	$12,673,569 33	
			$12,673,569 33
Cash in bank and trust companies			2,183,001 73
Interest due and accrued			1,322,294 16
Net uncollected and deferred premiums			795,396 07
Total admitted assets			$82,076,706 87

LIABILITIES.

Net value of outstanding policies and additions	$71,031,205 00
Unpaid losses not yet due (including resisted claims)	758,250 00
Premiums paid in advance	24,372 43
Total liabilities	$71,813,827 43
Surplus as regards policy holders	10,262 879 44
Aggregate	$82,076,706 87

All of which is respectfully submitted,

JOHN A. McCALL, Jr.,
Deputy Superintendent.

The Superintendent in person was present during the examination of the United States securities, bonds and mortgages and other stocks and bonds owned by the Company, and took part in said examination. He desires to join with his Deputy in assuring the public that the system of management and accuracy of detail, as well as the checks and individual responsibilities imposed on each person, who has anything to do with the loaning or investing the funds of the Company, command his most hearty approval. The President and all other officers of the Company were most prompt and courteous in affording every information; while so perfect is the organization of each department that any special item required was at once furnished with all its necessary and satisfactory vouchers. This will account for the fact that a corporation of such vast magnitude and importance could be fully and satisfactorily examined in a few weeks, which, under ordinary circumstances, would have required as many months.

William Smyth, Acting Superintendent.

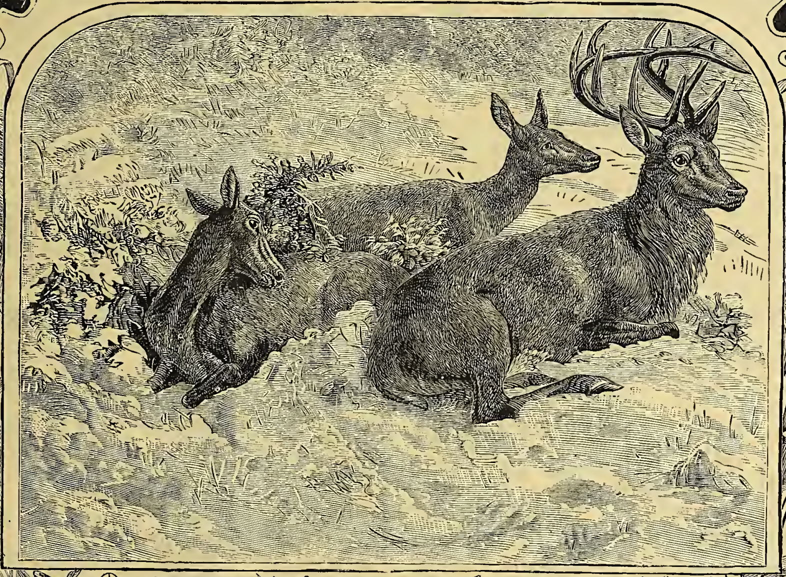
GENERAL AGENTS.

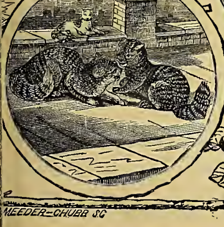
H. B. MERRELL, General Agent for Michigan, Indiana, Illinois, Wisconsin, Iowa and Minnesota. Address Merrell & Ferguson, Detroit, Mich. O. F. BRESEE, General Agent for Virginia, West Virginia, District of Columbia, Maryland, Kentucky, East Tennessee, Interior of the Carolinas, and Northern Georgia, 15 South Street, Baltimore, Md. JOHN G. JENNINGS, General Agent for Ohio, Cleveland, Ohio. JOHN W. NICHOLS, General Agent for Connecticut, New Haven, Ct. FAYETTE P. BROWN, General Agent for Vermont, and the Counties of Dutchess, Ulster, Orange, Putnam, Westchester, Rockland, Sullivan, Delaware, Broome, Tioga and Chemung, in State of New York, Yonkers, N. Y. DERICK L. BOARDMAN, General Agent for Northern and Western New York. Address Christie & Boardman, Troy, N. Y. A. B. FORBES, General Agent for Pacific Coast, San Francisco, Cal. AMOS D. SMITH, 3d, General Agent for Massachusetts, Boston, Mass. W. D. LITTLE, General Agent for Maine and New Hampshire, Portland, Me. F. W. VANUXEM, General Agent for Pennsylvania and Delaware. Address, Vanuxem, Bates & Lambert, Philadelphia, Pa. BYRON SHERMAN, General Agent for Missouri, Kansas, Nebraska, Colorado and Western Arkansas, and Dakota and Wyoming Territory, 300 Fourth Street, St. Louis, Mo. C. A. HOPKINS, General Agent for Rhode Island, Providence, R. I. CHARLES H. RAYMOND, No. 141 Broadway, General Agent for New York City, Long Island and Staten Island. GEO. B. RAYMOND, General Agent for New Jersey, 749 Broad Street, Newark, N. J.

APRIL, 1877.

AMERICAN AGRICULTURIST,

FOR THE FARM, GARDEN & HOUSEHOLD.





Vol. XXXVI

Number 4.

PUBLISHED BY THE
ORANGE JUDD COMPANY,
245 BROADWAY,
NEW-YORK.

MEEDER-CHUBB SC

C.B. Del.

ASHTON'S
FACTORY FILLED SALT.

CAUTION TO BUTTER AND CHEESE MANUFACTURERS IN THE UNITED STATES.

It has come to our knowledge that salt manufacturers and others are issuing circulars in the United States claiming their salt is equal to Ashton's Factory Filled Salt, and as proof they publish certain tests by chemical analysis. We beg to say that consumers of salt ought not to be deceived by such representations, as such analysis does not determine whether one brand of salt is as good or suitable for a particular purpose as another. For instance, St. Martin's Salt may, by analysis, prove as pure as Ashton's, and yet St. Martin's Salt is suitable for beef and pork packing and is entirely unfit for butter, on account of its *grain*, whilst Ashton's Salt is unsuitable for beef and pork packing, yet is just the quality and grain required for butter making. Misrepresentations have been made with regard not only to the quality of Ashton's Salt, but also to the sacking. With reference to the quality of the salt, we say that the same care is taken to-day in its manufacture as for more than half a century. Also that the process of manufacture is the same which originally secured the grain and quality which has so distinguished it from the beginning, and which has secured for it a precedence over all other brands of salt. Our process of manufacture, differing from that to which any other salt is subjected, makes **ASHTON'S FACTORY FILLED SALT** uniform in grain, free from all impurities, while in quality it is exactly what is best suited for the manufacture of butter, into which it dissolves uniformly, and it is a fact too well known for even notice here, that butter must be **uniformly** salted to make it of the highest quality. We do not ask butter manufacturers of the United States to accept our word alone as proof that the quality of **ASHTON'S FACTORY FILLED SALT** is the best that can be used for their purposes, for we are in possession of many certificates from eminent merchants, and responsible butter makers, of its quality, and offer from a few sources, which will at once be recognized as important and commanding, letters which will speak for themselves, since they come from a district that has secured for its butter manufacture the highest market prices. It is well known that Orange Co. butter has realized the first position in the New York market, on account of its quality, and that the highest price is paid for the same. Therefore the following letters from Messrs. Homer Ramsdell & Co., Messrs. W. O. Maeller & Co., and Mr. E. T. Skidmore, of Newburgh, Orange Co., N. Y., all of whom have been for over a quarter of a century distributors of salt in this dairy district, will command the attention of butter makers everywhere.

Newburgh, N. Y., January 10th, 1877.—*Gentlemen*:—It is our opinion that Ashton's Factory Filled Salt is the best salt imported into the United States, and we have no doubt that the excellence of Orange Co. butter was and is maintained through the almost exclusive use of this brand of salt. Yours truly, (Signed) HOMER RAMSDELL & CO.

Newburgh, N. Y., January 13th, 1877.—*Gentlemen*:—Your inquiry with reference to salt used for butter purposes is at hand. On account of our experience with Ashton's and other brands of Liverpool salt, we should not consider it right or even prudent to recommend any brand except Ashton's for butter manufacture, because in weight and quality it never varies. (Signed) W. O. MAILLER & CO.

Newburgh, N. Y., January 15th, 1877.—*Gentlemen*:—I have not the slightest doubt that the superior quality of Orange Co. butter was and is due to the use of Ashton's Salt, which I consider the best and only safe salt to use in butter making, and I could not recommend any other brand Several years ago I tried to introduce domestic salt against Ashton's, but complaints against butter made with it compelled me to abandon the attempt, and go back to Ashton's. Yours truly, (Signed) E. T. SKIDMORE.

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The book cannot fail to be of great value to all farmers who are breeding this kind of stock, and its sale will be large, especially in the West, where sheep growing is acquiring new importance.—*The Indiana Farmer*, Indianapolis.

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With Suggestions for their Repression and Methods for their Destruction.
BY
CHARLES V. RILEY, M. A., PH. D.
(STATE ENTOMOLOGIST OF MISSOURI.)
FINELY ILLUSTRATED.

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THE COLORADO POTATO-BEETLE.

Its Past History.—The Insect's Native Home.—Rate at which it traveled.—How it traveled.—It spreads but does not travel in the Sense of leaving one District for another.—Area invaded by It.—Causes which limit its Spread.—How it affected the Price of Potatoes.—The Modification it has undergone.—Its Natural History.—Its Poisonous Qualities.—Its Food Plants.—The Beetle eats as well as the Larva.—Its Natural Enemies.—Remedies.—The Use of Paris Green.—Bogus Experiments —Alarm about the Insect Abroad.—Nomenclature.—The Bogus Colorado Potato-beetle.

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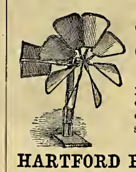

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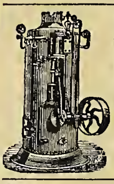

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NOTICES BY THE PRESS.

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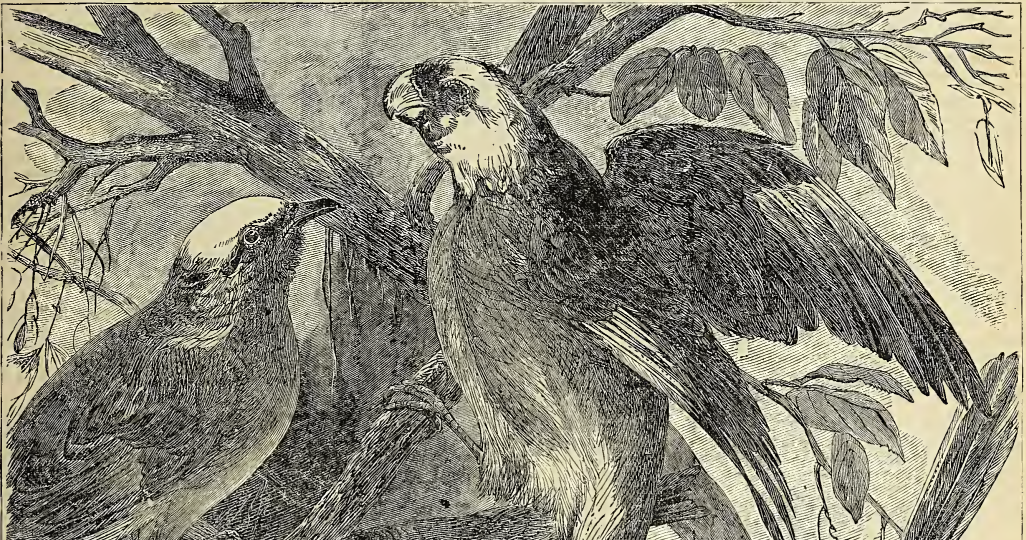
VOLUME XXXVI.—No. 4. NEW YORK, APRIL, 1877. NEW SERIES—No. 363.



SOME BIRDS OF THE SOUTHERN UNITED STATES.— *Drawn and Engraved for the American Agriculturist.*

In complying with our request for a portrait of the Carolina Parrot, the artist has added those of some other birds peculiar to the Southern States, to keep it company. A description of the Parrot is given on page 132. Of the other birds, the most interesting for its rarity, is the White-headed Dove, the bird at the left of the Parrot. It is about 14 in. long, of a dusky grayish blue, which is lighter below, and the wings and tail darker; the crown of the head is of a pure white, while the hind-part of the neck is beautifully variegated with purplish brown, with golden reflections. This exceedingly rare bird has thus far been found only on the Florida Keys, which it reaches from the West Indies. The bird at the right is the well-known Mocking Bird, which, though found in abundance only at the South, rarely reaches as far north as Massachusetts, and extends from the Atlantic to the Pacific.

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◆

One Thousand Fowls in One House.—"M. A. S.," Wilbraham, Mass. It cannot be done. It has been tried, and has failed every time. There is a good reason for the failures. No animals can exist in a healthy condition, when crowded in large numbers, in one building or enclosure. It is in crowded car-horse stables in the cities, although they may be kept never so cleanly, or managed never so skillfully, that epizoötic diseases occur; it is in large flocks and herds that disease is most prevalent; it is in the large hog yards of the West, that the so-called cholera abounds, and it is crowded tenement houses that the death-rate of large cities is the largest. Fowls are not hardy animals, and soon succumb to unwholesome conditions of life. To succeed with large numbers of them, there is but one method, and that is by keeping them in colonies. Procure and read "An Egg Farm," by H. H. Stoddard, published by Orange Judd Co., in which this subject is thoroughly and practically treated.

Calendar for April.

Day of Month.	Day of Week.	Boston. N. England. N. York State. Michigan, Wisconsin. Iowa. and Oregon.			N. Y. City. Ct., Philadelphia, New Jersey. Penn.. Ohio. Indiana, and Illinois.			Washington. Maryland, Virginia. Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	5 42	6 25	11 0	5 43	6 25	10 53	5 44	6 24	10 46
2	M	5 41	6 27	morn	5 41	6 26	11 58	5 42	6 25	11 50
3	T	5 39	6 28	0 6	5 40	6 27	morn	5 41	6 26	morn
4	W	5 37	6 29	1 3	5 38	6 28	0 55	5 39	6 27	0 46
5	T	5 35	6 30	1 52	5 36	6 29	1 43	5 38	6 28	1 36
6	F	5 33	6 31	2 29	5 35	6 30	2 21	5 36	6 29	2 15
7	S	5 31	6 32	3 1	5 33	6 31	2 53	5 35	6 30	2 49
8	S	5 30	6 33	3 25	5 31	6 32	3 20	5 33	6 31	3 17
9	M	5 28	6 34	3 47	5 30	6 33	3 43	5 32	6 32	3 40
10	T	5 27	6 35	4 4	5 28	6 34	4 2	5 30	6 33	4 2
11	W	5 25	6 37	4 22	5 27	6 35	4 22	5 29	6 33	4 21
12	T	5 23	6 38	4 41	5 25	6 36	4 43	5 27	6 34	4 44
13	F	5 22	6 39	sets	5 24	6 37	sets	5 26	6 35	sets.
14	S	5 20	6 40	8 9	5 22	6 38	8 6	5 24	6 36	8 1
15	S	5 18	6 42	9 23	5 21	6 39	9 19	5 23	6 37	9 12
16	M	5 17	6 43	10 36	5 19	6 40	10 30	5 21	9 38	10 23
17	T	5 15	6 44	11 44	5 18	6 41	11 36	5 20	6 39	11 29
18	W	5 14	6 45	morn	5 16	6 42	morn	5 19	6 40	morn
19	T	5 12	6 46	0 42	5 15	6 43	0 36	5 18	6 41	0 28
20	F	5 10	6 47	1 29	5 13	6 44	1 23	5 16	6 42	1 16
21	S	5 9	6 48	2 5	5 12	6 45	2 1	5 14	6 43	1 55
22	S	5 8	6 49	2 36	5 10	6 46	2 33	5 13	6 44	2 30
23	M	5 6	6 50	3 0	5 9	6 47	2 59	5 12	6 45	2 57
24	T	5 4	6 51	3 25	5 7	6 48	3 24	5 11	6 46	3 23
25	W	5 3	6 52	3 46	5 6	6 49	3 47	5 10	6 47	3 48
26	T	5 1	6 54	4 8	5 4	6 50	4 11	5 8	6 48	4 13
27	F	5 0	6 55	rises	5 3	6 51	rises	5 7	6 49	rises
28	S	4 58	6 56	8 37	5 2	6 53	8 32	5 5	6 50	8 26
29	S	4 57	6 57	9 47	5 1	6 54	9 40	5 3	6 51	9 33
30	M	4 56	6 58	10 49	4 59	6 55	10 43	5 2	6 52	10 34

PHASES OF THE MOON.

MOON.	D.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
		H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	5	11 46 mo.	11 34 mo.	11 22 mo	11 10 mo.	10 40 mo.
New M'n	13	1 6 ev.	0 54 ev.	0 42 ev.	0 30 ev.	0 0 n'n.
1st Quart	20	2 53 ev.	2 41 ev.	2 29 ev.	2 17 ev.	1 47 ev.
Full M'n	27	11 52 mo.	11 40 mo.	11 28 mo	11 16 mo.	10 46 mo.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1877.

With April, farm work, nearly everywhere, begins in earnest. In some of the Middle and Western States, much of the spring work is done, and corn and root planting only remains. But in the more Northern States, summer follows winter without a spring, with a rush, and the farmer who is not well prepared, finds his work "all of a heap" and pushing him, instead of his pushing the work. To hurry over work is to throw away labor. No hurry is needed, when work is well laid out, and every job is foreseen and planned for. More thought must go into our work. Although the times are mending, and farmers have felt but little of the general distress that business men have experienced yet we may confess that times are still hard. Prices are low and profits are small. Hard times quicken invention, and when men are pressed, their intellects are wonderfully brightened. Most of the great inventions that have revolutionized labor, have been forced into men's minds by pressure of unfavorable circumstances. The alternative has frequently been "a new and cheap method or ruin." Just now we seem to be on the eve of some needed discovery for cheapening farm labor, or making it more effective. The whole world is striving against us, and so far we have beaten it. But now other nations are using our tools, implements, and methods, and all that is left to us is cheap land, and an indomitable energy that never gives in. We shall still maintain our position. When the time was ripe for some great innovation, it has always come; the mother "necessity" never yet failed to find the child "invention." No great staple can long be produced at a loss, or even at less than a living profit, and now that we see clearly the dawning of a promising day in business, there is a certainty that the farmer's labor will be as well recompensed as it deserves. But we shall have to work for it, not so much with our hands as with our brains.

Hints about Work.

Plowing.—None but a fertile soil should be turned over very deeply. At this season, this should be well remembered, because there is no time for the weather to mellow the fresh soil. For spring crops, the soil should be turned up mellow and rich, that the seed may push into active growth at once.

Fertilizers.—For the reasons just mentioned, fertilizers for use on spring crops should be such as are quickly soluble, and readily taken up by the plant. Now that the uncertainty in regard to the quality of Peruvian guano has been removed, this is perhaps the best special fertilizer to use without previous experiment. See Prof. Atwater's article on testing fertilizers. Some of the chemical mixtures may be cautiously used as a substitute for guano on special crops.

Live Stock.—One of the most encouraging events of late, has been the opening of an export trade of beef and mutton to England. If this succeeds, and grows, as now seems probable, it will provide a way out of our heretofore greatest difficulties. Instead of growing and exporting grain, we shall grow and use it ourselves, and export the produce. This will leave our farms in much better plight. To meet this new demand, our stock must be improved in quality, by the use of pure-bred bulls and rams, and increased in quantity, by sparing the heifer calves and ewe lambs from slaughter.

Raising Horses.—As has always been the case in the past, the increasing use of steam-engines makes more work for horses, and horses of the working kind are scarce. It is a question worth considering, if it would not be better to keep mares upon the farms for breeding, instead of selling them to work in the cities, where their productive powers are not used. We have found mares equally serviceable with horses for farm work, and an annual colt will nearly pay for a mare's feed.

Brood-Mares, if rightly managed, may come in after the spring's work is over, and can raise a colt before the fall-work comes on. If the colt comes in June, the mare is well able to plow and harrow until the middle of May, and will be ready for work again by the time haying begins. But at this season a brood-mare's work should be steady, although it may be hard. Violent, jerky, and long continued work is what injures her.

Young Stock.—As the change of feed comes on, care must be exercised in regard to young animals. It is best to turn them on to grass for an hour or two daily, before the pasture becomes full. Well-conditioned yearlings are in more danger than poorer ones, and with them greater care should be taken.

Spring Crops.—Where the lateness of the season has not permitted the sowing of spring crops, the hints given last month will be applicable.

Plaster.—A bushel of ground gypsum per acre, will be found a very useful application for young clover, or for oats, when they are a little above ground. Gypsum is useful for its own constituents, without depending upon its absorption of ammonia from the air. All the ammonia we get that way will be a very poor help. At 50 cents a bushel, plaster is a cheap fertilizer for clover, oats, or corn.

Root Crops.—Plowing should be done this month for mangels. No root crop pays better than this. Choose a piece of clean corn-stubble, plow thoroughly, open drills, in which drop manure at the rate of eight or ten tons per acre, cover with the plow, level with a light harrow lengthwise of the drills, so as not to obliterate them; then sow the seed over the manure with a hand or horse-planter, and scatter a little guano, or blood fertilizer along the row. Four pounds of seed for an acre is required. We prefer the Yellow Globe. Don't aim to get big roots, but a full crop of fair-sized ones. We are satisfied with 30 tons, or 1,000 bushels, per acre. At this rate a bushel costs 5 cts., or less. Sow late this month, or early in May.

Potatoes.—Early potatoes may be kept lightly covered with the hoe or a light one-horse plow. Watch the manœuvres of the potato beetle, and when it begins work, pick the insects from the leaves into a pan; the pan described in the *American Agriculturist* for July, 1876, will be found very handy for this work. By proper care, Paris green need not be used until the larvæ get to work, when no time should be lost. Every beetle killed this month may prevent the existence of over 1,000 larvæ.

Cows and Calves.—Incoming cows need careful feeding. Moderate feed will be found preventive of trouble after calving. With high-bred cows there is danger of milk-fever or garget. Prevent these by light feeding, for a month previous to the birth of the calf, and by a moderate purgative just after the calf appears, as mentioned last month.

Garget is now a very prevalent trouble. It comes through the higher feeding and greater milk production now so common. It is an inflammation and swollen condition of the udder. When it appears, bathe the udder frequently with warm water, working it well with the hands. If the milk is clotted, dissolve 1 oz. of carbonate of soda in a pint of water, inject with a syringe into the teats, and milk it out in a few minutes. Leave the calf with the cow.

Calves.—Spare the heifer calves of the best cows. A very good heifer may be raised on skim milk; the cream may be replaced by a little oil-meal. To feed a calf for the butcher for 5 weeks, on new milk, does not pay, even if it bring $10 or $12. Our cows are not so good as they might be, did we keep and generously raise the best heifer calves.

Manure.—Cart to the ground intended for corn. If it is sod ground, all the better, the sod will be made thicker and more valuable as a fertilizer.

Plowing for Corn may be delayed until the season admits of planting. We are satisfied that it is a good plan to plant on the mellow, freshly-turned soil before it dries, or has been beaten and hardened by rains. Time is often lost with this crop by planting too early, and before the soil is warmed.

Cleaning Up.—This should no longer be neglected. Warm, damp weather causes active decomposition of all rubbish, and the gases given off by this are unwholesome. Clean out and white-wash the cellar; if the floor is of earth, scrape it thoroughly and remove the top, replacing it with clean sand; then at the first opportunity cover it with cement of hydraulic lime and gravel. Rake up the yards, burn all the rubbish, and save the ashes. Clean up the manure heaps, and let off all surface water.

Rainy Days may be employed in cleaning tools, implements, and machines, and putting them in good order for work when they will be wanted; in making coops for chickens, or any of the handy contrivances for saving labor, that are so frequently described in the *American Agriculturist.*

Poultry.—With a grassy run for fowls, the grain feed may be reduced somewhat. Whatever grain is fed, may be given only in the morning, and at night, thus obliging the hens to forage in the middle of the day for themselves. Some stimulating condiment, such as Allen's Imperial Egg Food, will improve the health and prevent disease. Ducks should be kept shut up in the morning until they have laid, as they are very careless about their eggs. Geese may be set now, and should not be disturbed on their nests. The less fussing there is over sitting fowls the better. Keep water and food near the nests. Young fowls of whatever kind need a little feed often, but overfeeding is unwholesome.

Notes on Orchard and Garden Work.

There will be but few localities to which this paper will go, where spring-work has not fairly begun. In looking back over the notes of the past three months, we find that preparatory work in all the departments is pointed out well in advance, and those who have followed our advice and have laid their plans well ahead, have found, or will find, themselves ready for work with the opening season. It seems like repetition, but we are obliged to advise all our readers to look through the notes for these past months, as they will there find hints that they need, and because they do not find them in this issue, they may think we have omitted them, and write us for an "answer by return mail."

Orchard and Nursery.

Let us first give a few hints to those who will set trees this month, whether a few or many. It is not worth while to plant fruit trees on any land that will not yield a good crop of corn. If it needs manure for the corn-crop, then it equally needs it for a tree-crop. Primarily, then, the land, if not prepared last fall, should be put in order now. If it needs draining before it will yield good farm-crops, it needs it just as much for trees. Still, we would not put off planting because the land cannot be drained now. Set the trees, and solemnly promise them and yourself, that drains shall be laid between the rows before another spring.

When the trees arrive, and there is reason to think that they are frozen (such things happen even in April), put the box or package in the barn, throw a lot of hay or straw over it, and leave all to thaw very gradually. Otherwise, open the parcel and examine the trees. See that each variety or each bundle of the same sort is properly labeled. If a label is missing, look for it; if it cannot be found, see by reference to the bill or order, what it should be, and replace. If long on the way, and the weather warm and dry, the trees may have

A shriveled bark.—In that case, open a trench (in sandy soil is best), lay in the trees carefully, and cover them with earth, not thrown in heaps, but gradually shaken in from the shovel so that it will fall in among, and come in contact with, all the branches and twigs. Cover completely, root and branch, placing stakes so as to know just where to dig for them, and leave them for a week or so. When taken up, they will be as plump as ever, unless absolutely dead. If the trees are all right, and there are more than can be set at once, they should be

Heeled-in, a nurseryman and gardener's term, that bothers many persons. It means simply a temporary planting, and is done, in this case, to keep the roots from injury, until they can be planted. Trees received now may remain heeled-in for two or three weeks, and be as well off (or better) than if planted. If the roots are to be out of the ground for an hour, they should be heeled-in, and then not only are they taking no harm, but are really recovering from the effects of removal. It is the simplest of operations. With a few trees, a rude way is to lay them flat on the ground, and throw enough earth over the roots to cover them. The proper way is, to open a trench, and place the trees at an angle of 45°, a few at a time, throw in earth to well cover the roots, and fill all hollow spaces, add more trees, more earth, and so on. The trees are now safe, and if a long storm or other cause should prevent planting, they are just as well off. In this, and every other step, look out for labels.

In planting, first settle where the varieties are to go, putting all of a kind near together. Mark out the land, and put a stake to indicate where each tree is to stand. Where there are but few varieties and even rows, it is not of so much importance, but in a mixed collection, a map should be made and the position of each variety set down, and in planting, follow the map; with this, each tree may be identified if labels (as they surely will) get lost.

Cutting back.—If one could spend an hour or more in taking up each tree with a ball of earth, he might plant it in the orchard as it stood. But even in the best nursery digging a share, and often a large one, of the roots *must* be lost. This is not of so much consequence if met by a corresponding loss of top. The nurseryman knows that 99 in 100 would grumble, should he cut back the trees properly, so he sends *all* the top, and as much root as he can. It is safe to cut back from one half to two-thirds of every branch upon a young tree, as received from the nursery, to give a proper balance to root and top. Open, not a post-hole, but a broad, shallow hollow, to receive the roots, spread evenly in all directions; fill in the top soil by sprinkling it from the shovel, and let another work the soil in among the roots, leaving neither dense mats of fibres, nor hollow places under and between the large roots. It will take time, but it will be

Time well spent, to plant each tree carefully. Allow no heavy boots to stamp down the roots, but when all are well and carefully covered, an even pressure with the foot may be used, to compact the earth. A tree so set will need no stake.

Crops in the Orchard.—While the trees are small, it is well to cultivate manured crops between the rows; potatoes, or other root-crops, or corn, if kept far enough from the trees, are best.

Manuring Old Trees, or those that have come into bearing should have been cared for last month, or earlier. If they need manure, give it at once. Nearly all the "running out," bitter rot, and other troubles not due to insects, are merely cries for manure. Stable manure rarely comes amiss; this may be applied over the whole surface, except close to the trees, and turned under with a furrow so shallow as to not cut the roots. On orchards already fully manured in previous years, or naturally rich in vegetable matter, a dressing of lime will often produce gratifying results, and wood ashes scarcely ever come amiss on any soils.

Pruning may still be done, where the season is sufficiently backward, but if the buds have started, it is better to defer it until midsummer.

Insects require constant vigilance. See what is said on p. 143 about the Bark-louse, especially its introduction on new trees. Up to the time that the leaves open, clusters of the Tent-caterpillar's eggs may be found and destroyed, and the same may be said of cocoons of various kinds. See items on p. 88, last month, on cankerworm.

Grafting.—Though we have described the various methods of grafting at different times in former volumes, the number of inquiries that come show that there are many who need instruction in this operation. It should be recollected that these notes are not for experienced cultivators, and that what is perfectly familiar to them is a mystery to novices. With the constant addition of new readers, many of whom are newly giving attention to horticulture, it is impossible to avoid repetition of first principles, and there are many who look to our pages for their whole guidance in such matters.

What is Grafting?—Almost every one knows that a cutting, or piece of the stem, of many plants, if placed in the soil, will take root, grow, and become a new plant. In grafting, we take a piece of a stem, and instead of putting it in the soil, we plant it in the branch of another tree. Let us saw off a branch of an apple tree, and take a twig, say as large as a lead-pencil from another apple tree, whittle the lower end of it to a chamfer, or half of a wedge, for an inch or more, then carefully, by means of a wedge, push the bark of the branch away from the wood, and slip the twig with its cut part innermost, between the bark and wood, cover all the cut parts with some kind of an air-tight plaster, we shall essentially plant the twig on the branch. It will not take root, but wood will form and unite the two, putting the twig in communication with the roots of the tree. This is one kind of grafting, but a kind not suited to general use, though it illustrates the principle.

Why do we Graft?—To plant twigs of a kind of fruit that we know and want, upon the roots of a kind that we know nothing about, or of an undesirable kind. In the nursery, seeds of unknown kinds of apples, pears, etc., are sown; if these were allowed to grow up, they would in ten or more years bear fruit, but very likely poor fruit, and each seedling different. The nurseryman takes up these young trees, cuts them off nearly to the root, and grafts, or plants on them a twig of a well tested and valuable kind. This is the usual way of making apple trees in the nurseries. If the seedling tree is allowed to grow up and branch, then a graft may be put in each branch, all the rest of the tree being cut away, allowing the growth from the grafts to form the head.

What is needed in Grafting?—Several things. 1*st*, Something to graft upon, which is called the *stock*, whether it is a year-old seedling, or tree 20 or 30 years old. 2*nd*, The graft, or cion, which should be of a desirable kind of fruit. 3*rd*, Some air and water-proof material, to cover the wounds that must be made, until they heal over. 4*th*, The tools for doing the work, and, 5*th*, the knowledge and skill to use the tools. Let us notice each separately:

The Stock.—At this time we will notice only the grafting of old trees, or those that have reached a considerable size. A tree that is only one or two inches through, may be cut square off and grafted, at the hight of 3 or 4 feet from the ground. Large trees must not be renewed all at once, but the operation extend over two or three years, grafting the branches near the centre first. Select branches with a space free from knots, and from 1 to 4 inches thick.

The Cions are best cut in early winter, but may be taken at any time before the buds swell, keeping them cool in damp sawdust or sand, until wanted. They should be straight, healthy twigs, of the previous season's growth.

Covering Material.—Several kinds are used; we give that which we have found to be the best and least trouble, which is waxed cloth. Melt together beeswax, 3 parts; rosin, 2 parts, and tallow, 2 parts, in an iron skillet kept for the purpose. Melt very gradually over a slow fire, and stir together thoroughly. Some old muslin or calico will be needed, an old dress or sheet will answer, if so much worn that it will tear easily. Tear this into strips ⅜ to ½ inch wide, for small work, up to an inch for larger, or the strips may be two or more inches wide, to be torn smaller, as needed; they may be as long as the material will allow. Wind the strips on a stick, as seen in figure 1, laying it on regularly, and removing any loose threads, as the winding proceeds. When one strip is wound on, take another, putting its end *under* that of the first strip, as seen in figure 1; this saves much trouble in unwinding. When the roll is of convenient size, about 2½ inches through, fasten the end of the last strip with a pin. Furnish the end of the stick with a wire, to hang it by. Have the melted wax ready and put in the roll of cloth, keeping the wax hot enough to be liquid and penetrate every part of the roll. When the roll is thoroughly soaked through, hang it up over or near the stove, and allow it to drain, catching the drops in the vessel. When it no longer drips, hang it away to cool. Prepare what rolls may be needed, as, if kept away from the dust, the waxed strips will keep for some months. Also keep the wax in the skillet covered.

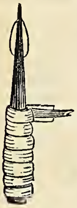


Fig. 1.

The Tools required are: a saw with fine teeth, set rather wide; a strong knife, and a smaller one, both very sharp, a wedge of iron or hard wood, a wooden mallet, and, if much work is to be done, a grafting knife or chisel, fig. 2. This has a thin blade and a strong back, the end of which turns up to form a wedge; the use of this knife will be shown presently. The wax strips, a lump of tallow, and some old cloths, for wiping the hands, may be included, which can be carried in a basket, unless one has

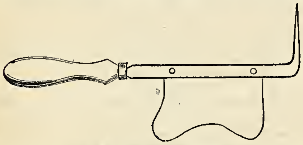


Fig. 2.—GRAFTING KNIFE.

An Orchard Box, which will be found very convenient to hold all the implements required in working among trees and vines in the orchard or fruit garden. Figure 3 shows a box, from a drawing sent several years ago, by a very ingenious correspondent in Pennsylvania, and holds all the appliances required in pruning, grafting, budding, and the like. It is a shallow box on legs, with an upright partition under the handle. Some pouches and loops of leather and springs of hard wood keep the things in place. This box shows a lot of bass-strips, wrapped in oil-cloth, on the handle; on the partition is another case of strings, a pouch of grafts, a bottle of shellac varnish, (see notes for last month,) a heavy knife, and two smaller, with a hone to sharpen them, a roll of waxed strips, a pencil, etc. The saw, mallet, grafting chisel, labels, and other needed articles may be put in the bottom of the box. We have found a shallow basket, fitted with partitions, very useful in the garden, and any handy person can fit up a box or basket, according to his work, that will save much running for and search after tools.

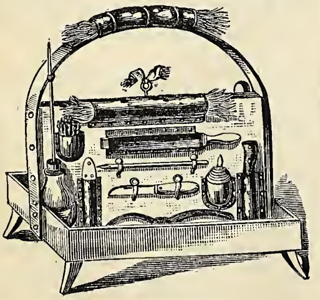


Fig. 3.—ORCHARD BOX.

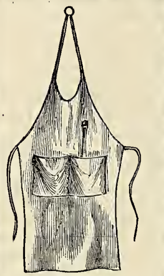


Fig. 4.—APRON.

An Apron will be useful; figure 4 gives a pattern for one, with pockets at the breast, which will come handy when working in the tops of trees. The stick of waxed strips may be hung from a button above one of the pockets.

When to Graft.—The best time is when the stock is just starting into growth, as shown by the swelling buds. If grafts are set before this, they are exposed to drying winds long before any union can take place with the stock. Peaches at the North do not succeed well when grafted. Plums do so fairly, when done very early. Apples and pears may be grafted from now up to blossoming time, but great care is required in later working.

The Kinds of Grafting are many, some curious kinds being given in the French works on the subject. We can now give only the two most in use, one for small, and the other for large stems.

Budding differs from grafting in being done with a single bud, instead of a cion with several buds, and late in the season, when the buds have formed.

The essential point in grafting is to bring the inner barks of stock and cion into as perfect contact as possible. The growth of woody stems takes place between the wood and the bark; the wood increasing by layers on its outside, the bark by new layers on its inside; here then is the place where the work is going on, and new wood is formed to unite the cion with the stock. In every style of grafting, this part of the cion must touch somewhere — and the more the better—a similar part in the stock.

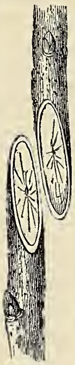


Fig. 5.

Splice and Whip Grafting.—If the cion and stock are of precisely the same size, and each is cut with the same slope, (fig. 5,) and the cut surfaces put together and bound, it is evident that the growing parts of both will have a wide contact, and be very sure to grow. The difficulty with this, the "splice graft," is, that the parts are easily displaced. After cutting the slopes, as in figure 5, split each cut surface, as in the right hand of figure 6, then put them together, as shown at the left hand, and we have the "whip graft," one of the most servicable kinds for small work. The notches not only help to hold the parts firmly, but increase the surfaces in contact, and will rarely fail. If the stock is larger than the cion, if the parts on one side are carefully brought together, it will succeed, and may be practised on stocks even an inch thick. Only a sharp knife is needed for this.

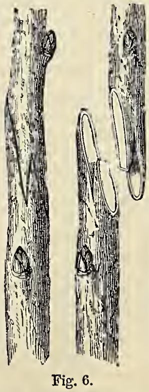


Fig. 6.

To Wax this Graft.—Tear off a piece from the waxed strip, and, beginning well below the cut, wrap, each layer slightly lapping the one below, as seen in figure 7, putting on the cloth so that it will adhere closely to the bark and to itself; after winding, slightly grease the thumb and finger, and smooth the waxed strip, rubbing in the direction of the turns, this will blend the whole into a perfectly water-tight and air-tight covering. But most frequently we have the stock larger than the cion, especially in grafting over old trees, and then use the oldest kind of grafting.

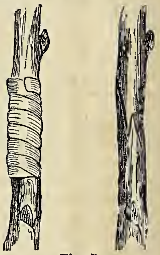


Fig. 7.

The "Cleft-graft."—Saw off the branch of the stock, being careful not to tear the bark; pare the cut surface smooth with a strong knife. If the stock is an inch or less in diameter, cut away about half with a slope as in figure 8. Then, by means of a strong, thin knife, or the grafting knife, and a blow of the mallet, make a split across this slope. Prepare the cion, which may have 2 to 4 buds, by whittling it to a long even wedge, as in figure 9, beginning at a bud (*A*) and tapering to an edge, making one side of the wedge somewhat thicker than the other, as seen in the section at *B*. Open the split in figure 8 with the point of a knife or a wedge, and insert the cion, as seen in figure 10, taking care that the vital parts, as before, come in contact, leaving the bud, *A*, just above the top of the stock. This bud is not absolutely necessary, but it is a center of active growth, and increases the chances of success. The slope in the stock is made because it will become covered with new wood and bark, and heal more completely than a cross-cut. When the stock is two or more inches across, two cions may be put in; the stock being sawed square across and trimmed, is split as in figure 11, with the grafting knife (fig. 2), the curved edge of which cuts the bark before the wood. The cleft is sprung open by means of the chisel point of the knife, while the cions are being inserted, and when they are in place (fig. 12), this is taken away, and the springing together of the cleft holds them firmly.

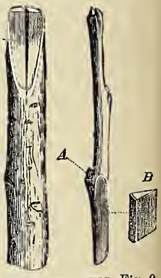


Fig. 8. CLEFT GRAFTING. Fig. 9.

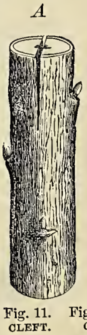


Fig. 11. CLEFT.

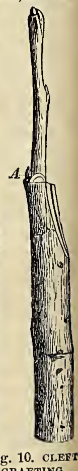


Fig. 10. CLEFT GRAFTING.

To wax this graft, take a strip of the waxed cloth an inch or more wide, begin below the cleft, and in two or three turns bring the edge sufficiently above the stock to lap over and cover the cut surface; having the part around the stock closely applied, bend in the free edge to cover the top, tearing it if need be, to fit around the cions; if any portion of the cut surface of either stock or cion is exposed, tear off small bits of the cloth to cover every part; finally, smooth and blend the covering together by passing over it the greased thumb and finger. When finished it will appear somewhat as in figure 13. It is well to put a bit of waxed cloth on the top of the cions, to prevent the cut surface from dying.

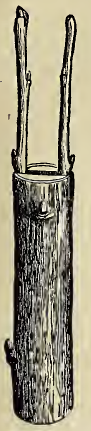


Fig. 12.

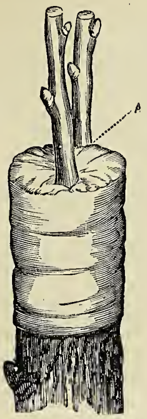


Fig. 13.

TWO GRAFTS.

Sundry Matters.—Keep the knives very sharp, and learn to make cuts with a single stroke of the knife ....Do not smear the surfaces that are to come in contact, with wax from the fingers....It makes much quicker work for one to set the grafts, and let another do the waxing. If much is to be done, still another may saw off the branches....In sawing off a branch, do not allow it to fall and tear the bark before it is completely severed....It is better to cut through the bark of the stock with a knife, before making the split, to secure a smooth cleft.... Before waxing, grease the hands slightly, and after waxing wipe them well before handling the tools ....Either label, or make a record of the varieties set, with date, etc.

Books on Fruit Culture give other kinds of grafting. Barry's "Fruit Garden," which is full on propagating fruits of all hardy kinds, furnishes us figures 8 to 12, and to the elaborate "American Pomology" of Doct. Warder, we are indebted for figures 5 and 6. To such a refinement is grafting carried in France, that there is a handsome book of 320 pages, Baltet's "L' Art de Greffer," entirely devoted to the subject, and describes in detail no less than 39 different styles and modifications.

A word to the Boys.—Can you whittle? Can you sharpen a lead-pencil neatly?—Then you can learn to graft. After a few trials upon twigs of almost any tree, you can soon get the knack of it. The whip-graft looks difficult, but in practice it is very easy. You can learn to graft without any special tools, and if you can be allowed some waxed cloth, you can make trials this spring. It is an art worth knowing. We know a young man who paid his way through college mainly by grafting for farmers.

The Fruit Garden.

The very full notes given in January, with those for last month, cover the whole ground for early work, and in most northern localities will be of present application. Whatever

Planting is to be done, should be attended to at the earliest moment, as the shrubs, etc., will suffer in hot weather, unless they become well rooted. See January notes for varieties and directions.

Currants.—Wherever the leaves are fairly expanded, the Currant *Abraxis*, or most common "worm" is to be looked for. Careful examination of the underside of the lower leaves will discover the eggs, and by the picking of a single leaf, dozens of eggs may be destroyed. If the worms appear, apply powdered white hellebore at once, or it may be applied stirred in water, about 2 oz. to the pailful. Scald the hellebore with a little hot water first, and fill up with cold. The same directions apply to gooseberries.

Strawberries.—If not already done, remove the covering around the plants, to expose them to light and air. Set plants *early*, that they may get well started before hot weather. We set in rows 3 feet apart, with plants one foot distant, allowing the runners to fill the spaces between the plants, and form solid rows. Where land is scarce, the rows may be 2 feet apart, or the plants set as close as 12 by 18 inches. Very rich soil and clean culture are needed. In the Southern States, picking and shipping have begun or soon will be, and we would remind growers of the importance of cooling off the berries before packing. The fruit must never be *soft*, but its ripeness governed by the time before it will reach the consumer. Pick into the baskets, and set these in a cool, shady place for some hours before packing. Use only baskets and crates that are well ventilated.

Grapes may still be set in many localities, and there can hardly be a yard of any kind, but will allow of one or more vines. The vine is so manageable that its fruiting part may be a long distance from the root.

◆

Kitchen and Market Garden.

The notes for February are almost exclusively devoted to this department, and we refer to them for all that relates to making hot-beds, and selecting seeds, while last month's notes give directions that will be generally timely now.

Hot-beds, as the heat of the sun increases, demand careful attention in ventilating; on warm days the sashes may be removed altogether, but they must be replaced early. The whole object should be to secure to the plants an uniform growing temperature, avoiding both chilling and burning, and to do this requires attention and close watching of the changes. Water, weed, and stir the soil among the plants, to keep them in a healthy condition. (In the Northern States this is early enough to sow Egg-plants, in the hot-bed.)

Cold Frames.—(See Feb.) Should be ready to receive transplanted Tomato and other plants, and allow them to be hardened off, before setting out. Cucumbers and melons may be started in these.

Sowing Seeds.—Garden plants may be divided into two classes, hardy and tender. The hardy may be sown as soon as the ground can be worked and hard frosts are over. The tender can not be risked in the open ground, until the soil gets warm, and this time is, in all parts of the country, that which experience has shown to be the proper one for planting Indian corn. The seeds that may be sown in the Northern States generally, this month, are: Beet, Cabbage (and all its forms of Brocoli, Cauliflower, etc.), Celery, Cress, Kohlrabi, Leek, Lettuce, Onions, Parsley, Parsnip, Peas, Potatoes, Radish, Spinach, Turnip (Early). N. B.—Under no circumstances is anything gained—but much is lost—by sowing in, or working the soil in any manner, when it is wet. Make haste—but slowly.

Plants from Cold Frames.—Early Cabbages, Cauliflower, and Lettuce are set out as soon as the soil can be made ready. Set the plants well down to the leaves, and press the soil firmly around them.

Potatoes.—Have the sets cut, and dried off, ready to plant as soon as the soil is ready. As soon as the earth is broken by the shoots, it is likely that the potato-bug will be there, and hand-picking must commence. One beetle killed now, prevents the appearance of thousands later in the season. If this cannot be attended to, do not plant any.

◆

Flower Garden and Lawn.

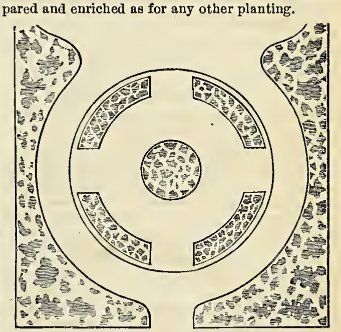
Our notes in this department are mainly devoted to

Laying out Front Yards.—By front yard, we refer to the space between the house and the road, whether in town or country, that is intended to be ornamental, but is often sadly the reverse. Those who have to put their yards in order this spring, should recollect that neatness and simplicity are the main things to be aimed at. It is impossible to reproduce Central Park on a plot 50 x 100 feet, or even on an acre. Those who overload a small space with fountain and grotto, rustic seat, and rock-work, statuary and vases, and all the appliances that they have seen in large places or read of in books, show very bad taste. In cities and large towns, where one entrance from the street must serve for everything, the path, as a general thing, runs directly from the gate to the house.

A direct path has many advantages in such places; if it deviates from a straight line, it is very difficult to prevent shop-boys and others from cutting across lots; but the direct path cuts the space in two in such a manner that it is very difficult to ornament it effectively. The plan here given suggests one method of overcoming this divided or halved appearance, and it allows of quite as much ornamentation as should be undertaken in a small place. No matter if the yard be small or large, a considerable portion should be devoted to grass. In the plan the center bed is grass, with a flower-bed in the center, and four others around the margins, while the borders at each side are devoted to shrubs, the taller ones near the fence, and lower ones towards the paths. The plan admits of several modifications: the marginal flower-beds may be omitted from the circle, leaving only the central one; or there may be no flower-beds here, but a clump of Rhododendrons, or a single handsome specimen Evergreen tree may take its place.

The Borders at the sides may be varied. So long as people insist upon having unsightly division fences, trouble must be taken to hide them. If neighbors would agree to it, a very low hedge, or a few wires, would answer to mark the boundary, greatly to the improvement of the neighborhood. If shrubs are not desired along the fences, these may be covered with climbers of various kinds, and the rest of the border occupied by flowers. No more space should be devoted to flowers than can be well filled and well cared for. Grass is always in good taste, and can be well kept with but little trouble; a neglected flower-bed is an eye-sore.

Grass.—In small yards it is better to lay turf than to sow seed; it costs a little more, but the effect is immediate and certain, while in an unfavorable season, seed may fail. Recollect, that to have good grass, it must have a good soil under it, and before the sods are laid, the soil should be as well prepared and enriched as for any other planting.



DESIGN FOR A FRONT YARD.

Climbing Vines.—In the spring improvements, do not forget the house itself. Few modern houses that set back from the street, are without a veranda, or piazza, of some kind, and this should be decorated with climbers. Among the tall-growing woody climbers, the following are good and to be had at all nurseries: Honeysuckles of the ever-blooming kind, Wistarias, Dutchman's Pipe (*Aristolochia Sipho*), Akebia, Virginia Creeper; and the new Japan Creeper (*Ampelopsis tricuspidata* or *Vietchii*). Among the lower climbers, the large-flowered kinds of Clematis are the most desirable.

Shrubs add much to the beauty of a place, and by a proper selection a succession may be had during the season. Lilacs, Japan Quinces, Weigelas, Deutzias, Spiræas, Forsythias, Flowering Currants, and others, are among those commonly planted, and are all good. Among the less common, the Japan Judas-tree, *Euonymus latifolia*, *Exochorda grandiflora*, Dwarf Buckeye, Ghent Azaleas, Rhododendrons, and a host of others may be found in the catalogues. The same may be said of

Trees.—While the common elms, maples, beeches, birches and others are unsurpassed, yet those who wish for a variety, can find ample means for gratifying their tastes, not only with deciduous trees, but with

Evergreens, of which a fair share should always be planted, not only for their cheerfulness in winter, but for the shelter they afford. The Norway Spruce has been found so generally successful, that we have an excess of it, to the neglect of equally useful kinds. Among evergreens, native and foreign, none exceeds in grace and beauty the Hemlock. For rapid growth and sturdy vigor, the Austrian Pine is unsurpassed. Our native pines should not be neglected, and those who would introduce variety of form and color among evergreens, will find that the nurseries offer abundant material.

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Greenhouse and Window Plants.

As out-door work presses, the plants in the window or greenhouse are apt to be neglected, at a time when they require all the more care. As the heat increases, insect life becomes the more active, and needs to be promptly met....Watering will require careful attention, especially for the plants in small pots....Select the plants that are to be set out in the borders, and give them the coolest part of the house, or if the weather will allow, set them in a pit or frame, to be hardened off....In propagating bedding plants, more trouble will be found in keeping the air of the house cooler than the temperature of the sand on the bench, and shading, sprinkling the walks, and every means must be resorted to.

◆

Commercial Matters—Market Prices.

Gold has been up to 105⅞, and down to 104¼, to the latter point on March 2d. Closing March 12, at 104⅝, as against 105⅝ on Feb. 12; 106 on Jan. 12; 107¼ on Dec. 12, 1876, and 114½ on the 12th of March, 1876... Business in Produce and Merchandise has been seriously impeded, during the month, by the political agitation, growing out of the question of the succession to the Presidency. The foreign market reports have been also of an adverse tenor, as a rule, operating as a check on export dealings. Home trade operations have been on a very limited scale. Breadstuffs have quite generally declined in price, materially, without stimulating the demand to any important extent, either for home use or for shipment. Flour and Wheat have been unusually dull, but closed with more symptoms of animation. The transactions in Flour on Saturday, March 10, were remarkably large, reaching an aggregate of 25,000 bbls.—about half of which amount went to West India and South American buyers,—and the market wound up stronger. Corn has been moving with more freedom of late, but on a much lower basis as to values, here and at the outports, on very liberal receipts, and a pressure to place supplies promptly. Rye has been recently more sought after for export, chiefly to Germany and Belgium, at steadier figures. Barley has been fairly active, but decidedly cheaper, closing more firmly. the later offerings having been less urgent. Oats and Malt have been moderately sought after. Corn-meal has declined considerably on free offerings and a moderate demand. Buckwheat and Buckwheat Flour have passed out of season in the wholesale way. ..Provisions, as a rule, have fallen materially in price, especially hog products, under a liberal offering, and remarkable moderate inquiry. Cheese has been exceptionably strong and wanted....Cotton has been quoted lower, leading to a brisk trade, particularly in the line of options....Wool has been in rather better request, and quoted steadier in price toward the close....Seeds and Hops have been quoted lower, on a restricted movement....Tobacco has been in fair demand within the previous range....Hay and Straw have been wanted at firm rates....Ocean Grain Freights have been moderately active, ruling firm during the early part of the month, but closing cheaper....Grain rates by steam to Liverpool closed on the 12th of March at 5½@6*d*; to Glasgow at 5½*d*; to London at 6*d*; to Liverpool, by sail, at 5@5½*d*; London, by sail, nominal, per bushel. Provisions by steam to Liverpool, 25*s*.@30*s*. per ton; Cotton by sail and steam at ¼*d*. ℘ ℔. Grain, by sail, for Cork and orders, at 4*s*.7½*d*.@4*s*.10½*d*. per quarter.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending March 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	239,000	263,000	1,401,000	69,000	194,000	613,000
27 d's *last* m'th	271,000	491,000	311,000	87,000	305,000	719,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 d's *this* m'th	227,000	634,000	1,931,000	98,000	246,000	771,000
27 d's *last* m'th	221,000	679,000	1,203,000	47,000	131,000	529,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1877..	239,000	263,000	1,401,000	69,000	194,000	613,000
24 days 1876..	293,000	729,000	1,471,000	33,000	151,000	1,016,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
23 days 1877..	227,000	634,000	1,931,000	98,000	246,000	771,000
24 days 1876..	346,000	1,911,000	1,617,000	33,000	336,000	841,0 0

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Mar. 5, 1877..	2,730,641	1,711,095	288,895	513,826	822,625	335,208
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Nov. 8, 1876..	2,048,233	3,206,003	294,381	478,441	1,002,891	495,640
Oct. 9, 1876..	1,931,892	1,195,387	158,305	91,245	825,187	421,751
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Exports from New York, Jan. 1, to March 8.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush
1877....	254,958	1,576,839	2,078,553	164,389	95,457	29,338	124,857
1876....	357,775	1,910,068	2,630,925	15,387	——	46,266	198,153

CURRENT WHOLESALE PRICES.

	Feb. 12.	Mar. 12.
PRICE OF GOLD	**105 5-8**	**104 5-8**
FLOUR—Super to Extra State	$5 40 @ 6 35	$5 35 @ 6 25
Super to Extra Southern	5 50 @ 9 25	5 45 @ 9 00
Extra Western	5 75 @11 00	5 55 @10 75
Extra Genesee	6 30 @ 7 50	6 25 @ 7 35.
Superfine Western	5 40 @ 5 90	5 35 @ 5 75
RYE FLOUR	3 00 @ 5 10	2 75 @ 5 00
CORN-MEAL	2 85 @ 3 55	2 65 @ 3 25
BUCKWHEAT FLOUR, ℘ 100 ℔s	3 50 @ 4 10	Nominal.
WHEAT—All kinds of White	1 45 @ 1 65	1 45 @ 1 60
All kinds of Red and Amber	1 10 @ 1 65	1 05 @ 1 60
CORN—Yellow	56½@ 61	56 @ 58
Mixed	55½@ 62	54 @ 58½
White	56½@ 62½	57 @ 60
OATS—Western	39 @ 50	37½@ 48
State	47 @ 55	48 @ 56
RYE	80 @ 93	81 @ 91
BARLEY	65 @ 1 12	57½@ 1 05
BUCKWHEAT	95 @ 1 00	Nominal.
BARLEY MALT	67½@ 1 30	65 @ 1 25
HAY—Bale, ℘ 100 ℔s	65 @ 1 05	65 @ 1 00
STRAW, ℘ 100 ℔s	55 @ 95	50 @ 80
COTTON—Middlings, ℘ ℔	12¾@ 12⅞	12¼@ 12⅝
HOPS—Crop of 1876, ℘ ℔	8 @ 25	7 @ 17
" old, ℘ ℔	6 @ 15	4 @ 12
FEATHERS—Live Geese, ℘ ℔	45 @ 57½	45 @ 55
SEED—Clover, ℘ ℔	15 @ 16¾	14½@ 16
Timothy, ℘ bushel	1 90 @ 2 10	1 90 @ 2 05
Flax, ℘ bushel	— @ 1 70	1 70 @ 1 75
SUGAR—Refi'g & Grocery ℘ ℔	8½@ 10½	8¼@ 10⅛
MOLASSES, Cuba, ℘ gal. 50 test	36 @ 37½	39 @ 40
New Orleans, new crop, ℘ gal	40 @ 59	40 @ 56
COFFEE—Rio (Gold)	17½@ 21	17 @ 20¾
TOBACCO, Kentucky, &c., ℘ ℔	5 @ 18	5 @ 8
Seed Leaf, ℘ ℔	4¼@ 50	4½@ 50
WOOL—Domestic Fleece, ℘ ℔	30 @ 53	30 @ 52½
Domestic, pulled, ℘ ℔	20 @ 45	20 @ 45
California, spring clip	15 @ 30	15 @ 30
California fall clip	13 @ 23	12 @ 23
TALLOW, ℘ ℔	8 @ 8¾	7⅞@ 8⅛
OIL-CAKE—℘ ton	35 00 @36 50	— @34 00
PORK—Mess, ℘ barrel	16 65 @16 80	14 75 @ —
Prime, ℘ barrel	13 25 @13 50	12 00 @ —
BEEF—Plain mess	10 50 @12 00	10 50 @12 00
LARD, in tres. & bbls, ℘ 100 ℔	10 50 @11 25	9 50 @10 12½
BUTTER—State, ℘ ℔	20 @ 35	18 @ 32
Western, poor to fancy, ℘ ℔	14 @ 34	12 @ 32
CHEESE	6 @ 15½	6½@ 16½
BEANS—℘ bushel	1 50 @ 3 25	1 50 @ 3 25
PEAS—Canada, free, ℘ bush	— @ —	1 07 @ 1 10
EGGS—Fresh, ℘ dozen	22 @ 26	15½@ 17½
POULTRY—Fowls	9 @ 12	10 @ 14
Turkeys—℘ ℔	8 @ 12	5 @ 14
Geese, ℘ pair	1 25 @ 2 00	1 25 @ 2 00
Geese, ℘ ℔	7 @ 11	7 @ 10
Ducks, ℘ pair	50 @ 1 00	55 @ 1 25
Roosters, ℘ ℔	6 @ 8	6 @ 8
Chickens, dry pick'd ℔	10 @ 14	11 @ 14
GROUSE, ℘ pair	60 @ 80	— @ —
PARTRIDGE, ℘ doz	40 @ 45	— @ —
DUCKS, Wild, ℘ pair	20 @ 2 00	80 @ 2 00
QUAIL, ℘ dozen	65 @ 1 00	— @ —
PIGEONS, wild, ℘ dozen	— @ —	75 @ 1 65
VENISON, ℘ ℔	— @ —	— @ —
RABBITS, ℘ lb	— @ —	5 @ 10
HARES, ℘ pair	20 @ 30	8 @ 12
TURNIPS ℘ bbl	75 @ —	50 @ 75
CABBAGES—℘ 100	5 00 @ 9 00	— @ —
ONIONS—℘ bbl	3 00 @ 5 00	2 75 @ 4 50
POTATOES—℘ bbl	3 25 @ 4 00	2 75 @ 3 62½
new, Bermuda	6 25 @ 8 00	6 00 @ 7 00
SWEET POTATOES—℘ bbl	2 50 @ 4 75	2 00 @ 4 50
WATERCRESSES, ℘ bkt	— @ —	37 @ 50
SPINACH, ℘ bbl	— @ —	2 00 @ 2 25
TOMATOES, new Bermuda, bx	2 50 @ 3 00	1 25 @ 1 75
BROOM-CORN	3½@ 8	3 @ 7
GREEN PEAS, ℘ bush	1 35 @ 1 40	1 50 @ 1 62½
CRANBERRIES—℘ bbl	8 00 @10 50	— @ —
" ℘ crate	2 50 @ 3 00	2 50 @ 3 00
APPLES—℘ barrel	1 25 @ 2 25	1 25 @ 2 00
SQUASH, ℘ bbl	1 25 @ 1 75	1 25 @ 1 75
GRAPES, ℘ ℔	4 @ 8	— @ —
CIDER, ℘ gal	— @ —	7 @ 9

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Feb. 19	8,542	148	693	16,861	19,257
Feb. 26	8,659	37	942	24,127	20,455
Mar. 5	9,047	111	770	16,719	16,831
Mar. 12	8,039	153	933	15,035	13,658
Total for 4 Weeks	34,287	449	3,338	72,741	70,201
do. *for prev. 5 Weeks*	46,684	532	3,637	110,518	101,734

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	8,582	112	834	18,185	17,550
do. do. *last Month*	9,337	106	727	22,103	20,347
do. do. *prev's Month*	7,821	85	729	19,137	26,597

Beeves.—The foreign trade in dressed meats has now a very great influence on our market. The export of 5,357 out of a total receipt of 34,287 head in the past month is very noticeable, besides these about 300 head were sent out alive. In addition a very noteworthy thing was the receipt of extra beeves from Colorado, which sold for 11½c. on 57 ℔s. estimated dressed weight. The fore part of the month the market drooped, but the relief of 1830 head exported in the last week of the month restored prices, and left a gain of ½c. ℘ ℔ on the whole. Closing rates were 9 to 10c. for rough stock, 55 ℔s to the cwt.; 10½@10¾c. for good smooth cattle, 57 ℔s to the cwt., 11@11½c. for extra, estimated 58 ℔s, and 12@12½c. for the best. The market closed strong.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Feb. 19	7¾@12½c.	9¼@11¼c.	10¼c.
Feb. 26	8¾@12¾c.	9¼@10½c.	10 c.
Mar. 5	8¼@12½c.	9¼@11 e.	10 c.
Mar. 12	9 @12½c.	9¾@11½c.	9⅝c.

Cows.—It has been difficult to sell cows, the supply having been in excess of the demand. For poor stock prices are lower, but extra cows have been firm. Ordinary cows sold through the month for $40@$45; good cows for $50@$60, and extra for $75. A full blood Short-horn cow, an extra milker, brought $75....**Calves.**—"Kits" sold to save milk, and fortnight-old calves have been too plentiful to make a good market, and prices close weak. "Kits" sell for $2@$3 each; for 100 to 110 ℔ veals 6@7c. ℘ ℔, live weight, is paid; prime veals bring 9c.; hog-dressed range from 7@10c. ℘ ℔., and the best Jersey veals at 11@12c. ℘ ℔ live weight....**Sheep and Lambs.**—For sheep the market has been variable, changing with the very irregular receipts. As we close, an advance of ½c. ℘ ℔ was obtained, and prices were 4½c. ℘ ℔ live weight, for very poor Colorado sheep; 7½@8c. ℘ ℔ for fine Pennsylvania sheep, weighing 140 ℔s, and 8¾c. ℘ ℔ for some Ohio weighing 150 ℔s. Ordinary fair to good were worth 6½@7c. ℘ ℔. Lambs are appearing sparingly, bringing from $8.50 to $10 for 40 ℔s and over; one lot of 7 brought $70....**Swine.**—Dullness has been the general character of the market for the past month. The short receipts have not raised prices, or even stiffened the market, except temporarily. City dressed western closed at 7¼@7⅜c. ℘ ℔; light pigs at 7⅜c.; western dressed at 6½@6¾c.; State dressed at 7½c. for heavy, 8@8¼c. for medium, and 8½c. ℘ ℔ for pigs. The whole western packing for the winter season foot up to 4,144,572 head, an increase of 115,334 head over last season.

Prices of Feed.

Bran, per ton	$18.00@ $20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ℔	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℘ ton	$56.50
do. do. guaranteed, ℘ ton, cargo A	56.00
do. do. rectified, per ton, 10 p. c.	68.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
" Potato do do do do	25.97
" Turnip do do do do	19.36
" Fine Bone, strictly pure ...per ton	40.00
" Dissolved Bone, 15 per cent. do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton	40.00
" " Dry ground Fish Guano, ton	45.00
" " Pine Island Guano, per ton.	45.00
Stockbridge Corn Manure, (Boston) per acre	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
Fish Guano (crude in barrels), per ton	18.00
Bone Flour, per ton	45.00
Rawbones Ground (pure), per ton	33.00@ 40.60
German Potash Salts, (25@35 per cent), per ton.	22.00@ 25.00
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (95 per cent.), per lb.	8¾c.@ 9¼c.
Sulphate of Potash (80 per cent) per lb.	3½c.@ 4 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2¾c.@ 3¼e.
Nitrate of Soda, per lb.	4¼c.@ 4¾e.
Sulphate of Ammonia (25 per cent.), per lb.	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia.	$3.00@ $ 4.00

◆

Diseases of the Horse's Foot.—"E. H. M.," Hancock, N. Y. The horse's foot is so complicated a mass of bones, membranes, tendons, and laminæ, all highly sensitive to injury and disease, that it is difficult to say precisely from any written description, what may be the cause of lameness. For instance, it may be stated that there is heat in the foot, but the particular part in which the heat is, is very important to lead to a decision. In your case we suspect disease of the small sesamoid bone of the foot—the bony pully over which the flexor tendon of the foot plays—and of the tendon also. The symptoms of this affection are stepping short on the road, and tendency to stumble when first at work, which disappears after a short time. There is heat in the back part of the foot, swelling over the coronet, and throbbing of the arteries of the pastern. If the sole is struck with a hammer on each side of the frog, or the hoof is struck on the quarters, tenderness is shown by flinching. From disuse of the muscles on account of the lameness, the shoulder wastes in time, and then occurs what is popularly, but wrongly, known as sweeny. The treatment is to remove the shoe, and tie up the hoof in a poultice at night. Apply a mild blister to the sides of the coronet and pastern, and repeat it when the effects of the first are gone.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss..**Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (50 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German edition of the *American Agriculturist*. It contains not only the Engravings, and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other one contains so much useful information, or a tithe of its engravings. The Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners, and all would find it pay to do so.—Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc., because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond a couple of German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ Please call the attention of your German neighbors to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

Handy, JUST NOW, and Helpful. To have exactly the right thing at hand, at exactly the right time, is very satisfactory, is helpful, is profitable. Several **Millions** of people, in the country and in villages, are planning what to do in their fields and gardens. It would be very handy and helpful, if **each** one of these millions had right before him, or her, the numerous hints, suggestions, and directions about work that are found in this and last month's numbers of this paper, and which will be given in other numbers, all summer. For example, the list of the best varieties of seeds, etc., and the "Hints about Work," are not guess-work clippings; they are prepared with great care by practical men who have been thoroughly testing the plants, and crops, and methods, and who speak from large experience and extensive observation. We claim that each of our readers will do a good work, will positively benefit others by, just now, in this month of April, calling the attention of their friends and neighbors to the valuable aid they can get from these pages, and inducing them to supply themselves with the paper. **Moreover,** those who do this will be remunerated by the Publishers, who offer not only some promising potato seed, but a great variey of valuable articles to those who forward names of subscribers. See what they offer in the ILLUSTRATED PREMIUM-LIST. (If you have not a copy at hand, a postal card request will bring a free copy.) It is worth looking into. **Over 18,000 Persons** have already procured some of these valuable articles **free,** and every one else can do the same. This month of April is a good time to finish up premium lists begun, and make up new clubs of a few or many names. Our books show that a great number did this in April last year, hard as the times were. Now we are on the eve of better times, and the reading, thinking people are going to be the most prosperous.

Three Months More remain, in which Premium Lists begun can be filled up, and new lists be begun and completed. Take a new start at it, in this spring time. The free Premium Articles, too numerous to mention, contain several things that you much want, and can easily get without cost, for there are many people all around you that would be benefited greatly by this Journal, and who will take it if it is properly set before them, as its present readers can do, and for which they will be duly rewarded by the Publishers, as explained in the Premium List, that will be forwarded free to all who have not a copy.

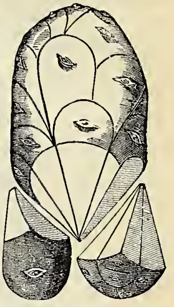
"A Black Sheep," or one a little "discolored," may, perhaps, at remote intervals, by some chance, get in among our large flock of good advertisers. If discovered by us, or *to* us, his place would be speedily vacated. While the advertisements help our expenses (the subscribers all together pay much less than the actual cost of supplying the paper to them), this department is intended to be a source of valuable and *reliable information* to the readers, and it will pay them to always look it all through, and especially at this season. It is like going through a great "Variety Bazaar," to find not only what one wants, but what he don't want. When writing to any of these advertisers, hint to them that you belong to the great army of Readers of the *American Agriculturist*, a wide-awake family, and one that expect and will stand no nonsense. The advertisements this month, as last, crowd the Editors at this opening business season. They will get back their *usual* reading columns next month.

Did It Pay?—Thirty-four years ago two farmers settled side by side, with about equal advantages as to soil, markets, etc. One of them subscribed for the *American Agriculturist*, and occasionally bought a book or two about his business, the whole costing him only $6 a year. His boys read and *thought* about their work, became interested in and *respected* it, and were happy in their toil, because they had something to think about. They grew up intelligent, and settled as good prosperous farmers, respected and influential....The other farmer "couldn't afford papers and books"; (he could afford 6 cents a day, or $20 a year, for tobacco, beer, etc.) His boys worked sullenly by day, and "skylarked" at night; they despised and hated their work, which for them was only exercising brute force, with little mind applied. When old enough to escape parential restraint, they quit the farm, one for this, and another for that, and *none* of them ever amounted to anything. Six dollars a year, or even $1.50 a year, would have made a wonderful difference—would have changed their whole course of life. Would it have paid?....Please show this item to some of your neighbors, who have perhaps not thought of this matter, and invite them to try this or some other good journal for the present year. You may do them a positive good by such a hint.

Imperial Egg Food.—"H.," Stafford's Springs, Conn. The Imperial egg food you inquire about, is intended for, and should be used as a condiment only, and not as a sole article of food; as a stimulant, occasionally given, it is useful. To give Cayenne pepper to poultry, without great caution, is dangerous. It is too heating and stimulating, when given often, or liberally, and becomes injurious to health. A mixture, properly compounded by a practiced poultry man, would be preferable, and the fact that this costs something, would doubtless have a useful tendency to make people properly economical in its use.

Shape of Harrow.—"F. W. F.," Preble Co., Ohio. The harrow described on page 417, *American Agriculturist*, 1876, figure 2, is not exactly square; it is longer than it is wide, but the corners are square.

Great Increase from Potatoes Planted.—New varieties of potatoes are produced from the seed of the seed balls. In planting a thousand seeds, no two seeds will produce tubers exactly alike. When a desirable tuber is obtained, it can be multiplied true to itself, to any extent, by planting the *tubers*, or single eyes; also by cutting the sprouts into small pieces and planting these. As ordinarily planted, one bushel o seed yields only from 5 to 20-fold increase. With care in dividing the *eyes*, several hundred pounds may be produced from a single pound; with extra efforts in using the slips, the product may be run up to 2,000-fold, or more. For example, last year Mr. H. C. Pearson, of Pitcairn, N. Y., grew **1,981** pounds of Ruby potatoes from 1 lb. planted, and **1,707** lbs. of Alphas from 1 lb. J. I. Salter, of St. Cloud, Minn., obtained from 1 lb. planted, **1,694** lbs, of Ruby, and **1,665** lbs. of Alpha. Several others obtained over 1,500 lbs. Methods of cultivation, soil, etc., and many other particulars, can be fully learned from B. K. Bliss & Sons' Potato Pamphlet, (forwarded post-paid for 10 cts). The annexed engraving illustrates a good method of dividing a seed potato for securing a large quantity of sets. It is desirable that each eye have a portion of the tuber with it, to supply nourishment to the young plant. With care the "*eyes*" themselves can be cut through, so as to make from two to a dozen pieces, each of which will send up a sprout. Hold any potato with the stem-end down, and it will be observed that the eyes are arranged spirally around it, running up to the top or seed-end. The engraving shows very plainly the method of dividing. As one set to a hill is quite as good as a dozen, it will be seen that this method of dividing is not only of great importance in planting new and costly varieties, but that it will effect a great saving of seed with common sorts, now worth from $3 to $4 a barrel. Two barrels of seed, carefully cut, are abundant for an acre. Four are generally used. With the present scarcity and high prices, an immense saving can be effected by a very little care in preparing the seed. An expert hand will cut two barrels a day, and thus save $6 to $8, or more, in the cost of seed.



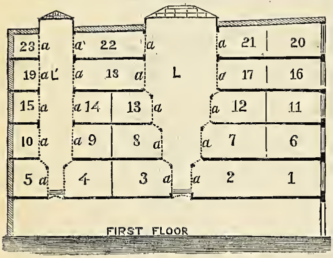
TRY THE NEW POTATOES.—Some Seed Free.—The liability to deterioration and disease, of the important potato crop makes it necessary to frequently introduce *new* varieties. Those who first get hold of a good new variety, will find great *profit* in it. A little seed can be rapidly multiplied, as shown above, and those who have a supply of seed first, can dispose of it at many times the price of the ordinary seed. Those trying two, three, four, or five new varieties, will find it greatly profitable if even one turns out to be of superior excellence. The most promising new variety offered this year is the **"Superior,"** described on pages 139 and 140 of this paper. The chances are that those who have the new seed next spring, as but few can procure it, will command their own price. The supply is very limited, probably not fifty bushels, all told. As stated last month, we have secured a small quantity, which we will distribute on the plan proposed, viz., we will send a *half* a pound of it (two medium potatoes), by mail, postpaid, to any present subscriber, who will obtain and forward one new subscriber to the *American Agriculturist* for 1877; or *three* parcels (or 1½ lbs.) if two new subscribers are sent to us, and in the same proportion for more subscribers. (This offer is only for new subscribers sent after March 1.) It will be readily seen, from the article above, that a single pound may be easily multiplied to 600 to 900 lbs. (10 to 15 bushels), or even much more during the present year, which may probably be worth anywhere from $50 to $100, or more, for seed next spring. We cannot, of course, guarantee that this potato will prove all that is hoped for it, in *all localities*, but the chances are so much in its favor, that this offer is worthy of the attention of all. It will be a simple matter to secure one, two, or more subscribers required to obtain this premium. These potatoes are sold by the single pound, at $1 a pound. (The Early Rose, when first offered, was sold at $5 a pound, and paid very largely at that price, to most of those who got seed the first year.) We have none to sell, and only a limited supply to present, in the manner above indicated—probably enough for all who apply in April; but those desiring it as above, should act promptly, before the supply runs out.

Our New Office Arrangements.

Our friends visiting the *American Agriculturist* Office hereafter, will find us in more pleasant quarters than during ten years past, viz.: in the light and airy suite of Rooms on the first floor above the Street of 245 Broadway. The leading Business Office, (1, 2,) fronting 25 feet on Broadway, and extending back 50 feet, is reached by a broad easy flight of stairs. Running back of this. 64 feet, and then around to Murray St. are rooms 3, 4, 5, 5½. occupied by the Managing Editor, business and mail clerks, etc. The Mailing and packing rooms are in the basement, connected by parcel "Elevators" with this floor. The Fifth Story rooms, 16 to 19, are occupied by the Associate Editors, and the Sixth Story, 20 to 23, by the Engravers and Printers. The Directors of the Company are:

ORANGE JUDD, *President.*	D. W. JUDD, *1st V. Pres't.*
A. W. NORTH, *Treasurer.*	WM. ANDERSON, *2d V. P't.*
SAM'L BURNHAM, *Secretary.*	ROBERT CUNNINGTON.

The Ground Floor is occupied throughout by Messrs. Foote & Richardson, who will be happy to fit out all callers with good honest suits of clothing at prices in accordance with the times. (See their adv'nt, p. 149.)—The Offices (6 to 15,) are occupied by G. M. Plympton, Counsellor in Patent Cases and Solicitor of Patents; J. N. & W. S. Worl, Artificial Stone and Contractors; Herbert A. Lee, Collector and Dealer in Municipal Bonds; James R. Angel, Attorney and Counsellor at Law, and others.



The whole AMERICAN AGRICULTURIST BUILDING is probably the best model of a new and superior method of obtaining abundant *light* for all the interior rooms and Halls, and in response to frequent requests, we will briefly explain it. The engraving above is a sectional, cut down through the different floors, from Broadway, back 114 feet. As the room value decreases with the increase of hight, the light-admitting openings, L, L', start with a narrow glass-covered opening over the first story, and expand as they go upward, until at the top the larger, or L opening, is 20 by 24 feet, and throws a flood of light down into the side rooms, and upon the first floor as through a lens. Glass-floored passages connect rooms 1, 2, 3, 4, and 5 in one suite, without materially obstructing the descent of light to the 1st floor.—The walls, *a*, *a*, *a*, of all the interior rooms, are of corrugated or waved *transparent* glass, which admits abundant light, and as these rooms are away from the street noise, they are most desirable. quiet offices for any purpose. The rooms 1, 6, 11, 16, 20, are lighted from Broadway. The rooms 5, 10, 15, 19, 23, extend 50 feet, with sub-division, to Murray St., and receive light from the front on that street, and through the glass walls on the side of L'. This plan may be adopted in all blocks of buildings. The waved-glass of the interior walls, obtained from England specially for this building, while shutting out direct observation, does not intercept any light passing through them, as is the case with ground or stained glass.

Bulletin of the Bussey Institution.—Part I. of Vol. 2, like its predecessors, contains articles of permanent value. The Bulletins can now be purchased, at 75 cents a Part, of the publisher, John Allyn, Boston.

Fine Light Brahmas.—Mr. G. S. Josselyn took the prize for these fowls at the Buffalo Poultry Show held last month, the judges commending his as the best average collection of this breed by one exhibitor that they had ever seen. One of our associates, who saw the birds, quite agrees with the judges.

Irrigation—Where and How—A New Work.—The popular notion that irrigation is only needed in California and other far Western localities, where the rainfall is not sufficient to sustain the crops, is rapidly changing. The great damage caused by occasional drouths, the great need of and difficulty of establishing never-failing meadows, so necessary to successful agriculture, and the uncertainty of market-farming in the older States, are rapidly convincing cultivators who live east of the great plains, that irrigation is important to them. One can hardly take up an agricultural paper, whether published East or West, without finding some reference to irrigation, not only as applied to agriculture in its broader sense, but to fruit-growing and market-gardening—in fact, gardening of all kinds. The letters of inquiry concerning irrigation have been numerous, but it is as impracticable to treat of a system, the fundamental principles of which are not generally understood, in brief articles in a journal, as it is to describe a surgical operation to one ignorant of anatomy. Nor could we refer inquirers to any suitable book upon the subject, as these, if not in other languages, are written for English readers, by authors having no appreciation of our peculiar needs and conditions. Under these circumstances, we announce, with special satisfaction, the completion of a work adapted to the wants of American cultivators, by our associate, Henry Stewart, Esq., and just published by the Orange Judd Company. In the present work, whatever in foreign treatises is applicable to our own circumstances is made available to the reader, while much information in regard to American methods, gathered from personal inspection and practice, is brought together in a systematic form. The author has special qualifications for such a work, being an experienced engineer as well as a farmer, and is thus enabled to make the work thoroughly practical, pointing out such methods of operation that an intelligent person can perform himself, and showing where the services of an engineer will be required. The various methods of irrigation are discussed and the book is intended to meet the wants of gardeners, fruit-growers, and those farmers who have only a meadow to water, as well as those who would irrigate their whole farm, while surveyors and civil engineers, who may be called upon to provide the means by which water from springs, wells, streams, or reservoirs, may be made available in irrigation, will find here a useful guide. It is plainly written and copiously illustrated; is thoroughly practical, and sufficiently suggestive to meet almost any possible case in which water may be used for the benefit of the crops. It treats very freely of the formation and management of irrigated meadows and pastures, and of the management of crops usually grown under irrigation. It is, in short, a practical manual of irrigation, which will be useful in a wide diversity of instances. It is handsomely printed and bound, and will be sent post-paid from this office for $1.50. T.

New Jersey Agriculture.—The N. J. Legislature is making encouraging progress in the promotion of agriculture. Four years ago it established a State Board of Agriculture, which is already making its usefulness manifest, and its reports should be in the hands of every farmer in the State. The attempt to establish an Experiment Station failed this year, but it is sure to succeed. Ex-Gov. Wm. A. Newell is President, and Prof. Geo. H. Cook Secretary.

Catalogues.—The list on pp. 154 and 155 contains all that reached us up to March 15—two days later than the pages are usually closed. We regret that a number of later ones must wait.

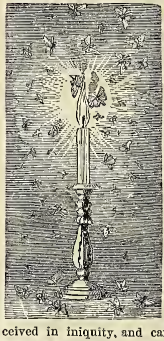
Look to the Mowing-Machines.—A day lost in making repairs, at haying-time, may make a serious loss in the crop. A poor knife or a broken guard causes a great waste of power. We notice that the makers of the "Buckeye" machines have so reduced the prices of knife-sections and guard fingers to all styles of their machines, that repairs can be made at a very small outlay. It is economy to keep a supply on hand.

The First Strawberries received in the New York market from the South arrived on March 8th, from Jacksonville, Fla. They were sent in quart boxes and enclosed in the Zero Refrigerator made by A. M. Lesley, 226 W. 23d street, New York. These refrigerators, which have a high reputation for the family, are now put to a new use. The fruit was consigned to Chas. H. Gibbs & Co., at whose store, 102 Warren street, we examined the fruit, and found it in remarkably good condition, after a week's journey. The first arrivals met with a ready sale at $4.50 and $3.50 a quart.

Nitrate of Soda for Potatoes.—"A. S. N.," Brandon, Vt. The directions given on page 95, *American Agriculturist* for March, ought to be sufficiently explicit. Chemical fertilizers should always be well mixed with the soil, and never put in contact with the seed. There are 4,840 hills to an acre, when 3 feet apart each way. As a tablespoonful of nitrate of soda is about one ounce, it will require 300 lbs. to go over an acre with one ounce to the hill. The price of nitrate of soda and other fertilizers is given in the market reports.

Lands in Virginia.—"W. C. E.," Newark, N. J. In the advertising columns there are frequently to be found notices from persons in Virginia, offering information about lands. It is too much to expect that we can find time to reply by mail, stating this or a similar fact. *Moral*—read the advertising columns before making inquiries. This will apply to many letters now before us, in regard to ditching machines, butter-workers, poultry of different kinds, etc., etc.

Sundry Humbugs.



It seems strange, after the repeated declaration of our views concerning lotteries, that persons should still write us, asking our opinion about this or that particular lottery. Yet a number of such letters have come of late, and we presume they must be from new readers, who have not seen what has been said in former numbers. To such we reply in brief: That we hold all lotteries demoralizing, no matter how honestly managed. That the majority—indeed, the exceptions are hardly enough to be counted as a minority—are, from the bottom upwards, out and out swindles, conceived in iniquity, and carried on in fraud. Besides this, all lotteries are illegal. The laws of the United States prohibit them, as far as they can do, by excluding all lottery schemes, circulars, etc., from the mails, and make the sending of these a penal offence. Most of the States have laws prohibiting lotteries within the States, and the sale of tickets from elsewhere. It is true that this law, like others, is often disregarded, and especially in the city of New York have lottery tickets been sold in open defiance of the law. But lately these

LOTTERY DEALERS CAME TO GRIEF,

and on March 10th last, some 30 or 40 of them were arrested, and their places closed. Mr. Anthony Comstock, the Special Agent of the Post-office Department, and an officer of the Society for the Suppression of Vice, obtained warrants from the United States Court against those who illegally used the mails, and from the City Courts, warrants of arrest for selling tickets in violation of the law, and thus doubly armed, he, with sufficient aid, visited the leading places, the "high-toned," Brussels-carpeted, rose-wood-furnished offices, where the business was carried on with all the forms and respectability of a banking-house. All these elegant proprietors and their gentlemanly clerks were trotted off to the Tombs, where they were committed, generally under assumed names, or gave bail to appear for trial. A large amount of stock in trade was seized, including 41,200 tickets, 124,000 circulars, 50,570 addressed envelopes, containing circulars for mailing. 7,400 letters, etc. The articles of their stock in trade these chaps value most highly, are their

BOOKS OF ADDRESSES.

Of these records, 88 books were seized, containing some 75,000 names. The good people who "wonder how they got hold of my name," would no doubt find that it was on more than one of these lists. These arrests, while including the leaders, by no means comprise a large share, even, of those engaged in the lottery business, but they have had the effect of closing the rest, until the results of this raid are seen. The chaps thus arrested are able to make a hard fight. Their chief hope is in finding a defect in the law. and they will employ the most acute counsel to do this. Heretofore they have escaped through some weak spot in the statute, and it remains to be seen if amending the law has made it strong enough to hold rogues who have a plenty of money.

STUDENTS ARE NOT NEGLECTED

by these lottery scamps. In one of the offices which were cleared out was found a collection of catalogues, including those of nearly every college in the country. .....We have on former occasions stated that we considered it a great misfortune for a person to draw a prize in a lottery, having in mind several sad instances within our own knowledge where men were

RUINED BY "GOOD LUCK."

A clerk in one of the offices that were shut up told a reporter of the "Tribune" the following: "Last fall a young man paid $25 for a ticket in the Havana lottery, but about a week before the drawing came off he found himself without money, and sold the ticket for $10 to an old farmer from Onondaga County. The ticket drew a prize of $75,000. The farmer was already in very comfortable circumstances, but this good fortune turned his head, and coming to New York he invested most of the money in the January drawings, receiving in return only a few hundred dollars. Not satisfied with this venture, he put all the ready money he possessed and a considerable sum he borrowed into the February drawing, but every ticket proved a blank. The infatuated man, firm in the belief that he will yet draw another big prize, came into our office the first part of last week and bought an unusually large supply of tickets with money he had raised by mortgaging his farm."

MEDICAL MATTERS

seem to be a little livelier just now, and appear to be ready to take advantage of that revival of business that all so hopefully wait for. We have even an occasional new nostrum, not very stunning, but still enough to show that the spirit of "Mother Noble," "Eddie Eastman," "Uncle Joe," and all the rest still lives. When we take up a new contribution to the literature of quackery, we know about what to expect, as they are formed upon

ESSENTIALLY THE SAME MODEL.

In the first place some one has to be very sick and given up by the physicians, and generally sent off to some far-away place, in search of health. Then the sick man must, in some out-of-the-way place, come across a person to take his case in hand—this is usually a medicine-man of the Indians, or a remarkable squaw, or it may be some very old woman or old man; but it is necessary that the deliverer be savage and dirty, or very old and ignorant, and if very "pious," all the better. Sick man takes medicine, and gets well; Indian or old person tells him the secret, the man who is cured feels it his duty to suffering humanity to sell the stuff at so much a box or bottle, with special terms to agents. This is the skeleton, which may be built upon and ornamented in various ways, but the ground-work is the same. Therefore, when we took up the document describing

"UNOKA'S PILINDIAS,"

we were not disappointed. The bill is headed, "Narrow Escape from Death;"—"Truth Stranger than Fiction," a remark that, if we mistake not, we have heard somewhere before. Jasper Z. Gordon was his name; he arrived at Rio de Janeiro, Brazil. Apparently in the last stages of consumption, old colored woman nursed him, and insisted on bringing in a squaw, who was a remarkable "medicine" woman; her name it was Unoka; her father was a great medicine man, probably old *Tapioka*, though his name is lost to history. In less than a week under Unoka's treatment with her pellets, Jasper became "a new man," and if any one doesn't believe it, why, there is Unoka's portrait. Of course, Jasper procured the secret from Unoka, but he does not go into the business—he sends the recipe to a New York friend, "to benefit mankind and yourself greatly by having the pellets made up and sold at a moderate price." But why did not Jasper return? He shall tell it in his own words, as he puts it, as a sweet ending to a sweet story: "I have fallen head over ears in love with the beautiful daughter of a rich old Don, and she returns my love with interest; and I have about made up my mind to live, love, and die here."—Jasper you are a brick!... The next story we take up is

DOCTOR UNCAS BRANT'S INDIAN ELIXIR OF LIFE,

and it runneth in brief thus: Unk (short for Uncas) was a missionary—Black-feet Indians—son had consumption—awful sick—gave up hope—Big Injun visits Unk's tent—Big Injun up and spoke, "Pale-face no die—my squaw cure him"—squaw comes, brings leaves, grinds between stones, feeds Unk's son on juice—But why tell the rest—of course, the son got well; of course, they found out about the plant; of course, the stuff is put up in bottles, with a discount to those who buy to sell again. So we might go on, filling page after page with variations of the same old story. The melancholy thing about it is that there are people who read and believe these yarns—and even swallow the stuff!.... We can not give farmers, and indeed others as well, any more useful caution than:

BE CAREFUL WHAT YOU SIGN!

We have in former volumes shown how a document agreeing to take certain articles at a certain price, could be, by cutting off an inch or so from one end, converted into a promissory note. Some of this kind has been practiced in Rhode Island, by the most persistent of all nuisances, the "Lightning-rod Man." A citizen was surprised to find that his note for $60 was due at a Rhode Island bank. Some time previous a "rodist" had agreed to "rod" his house for $15, and asked for his name and address, as a guide for the one who would follow and do the work. The name was signed in a book, apparently kept for the purpose, and turns up on a note for $60. We have not much sympathy for those who will deal with these lightning-rod chaps, but this case serves to add force to our caution: "Be careful what you sign."

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Every Grower of Potatoes, on a large or small scale, *ought* to have a copy of "Riley's Potato Pests." This book gives not only full information about the Colorado Beetle, which will cover nearly the whole country this year, and tells clearly the best modes of successfully resisting its attacks, but it also describes numerous other pests of this important crop, and methods of avoiding them. The work is not only instructive, but highly interesting, even to those who do not grow potatoes. Neatly bound copies are sent post-paid for 75 cts. An edition every way the same, except being bound in paper covers, is supplied at 50 cts. The book is worth its weight in silver, or gold even, to every one growing potatoes to the extent of half an acre or more, and is worth more than its cost to those having only a garden plot, or even no ground, for its interesting information.

The IMPORTANCE of the potato crop is shown by the following figures giving the production in the United States:

1850.....	65,797,896 bushels.	1871.....	120,461,700 bushels.
1860.....	111,148,867 bushels.	1872.....	113,516,000 bushels.
1870.....	114,775,000 bushels.	1875.....	166,877,000 bushels.

Wheat for Northern Iowa.—"G. W. R.," Butler Co., Iowa. Clawson wheat is a winter variety, and cannot be sown in the spring. Northern Iowa is a spring wheat section. The varieties most suitable there would be the Scotch Fife or the Canada Club wheats.

Essays on Gardening.—The prizes of fifty dollars each for the best Essays on the Cultivation of Cauliflower and Celery, offered by Peter Henderson as a special premium to the Centennial Commission, have just been awarded. That upon Cauliflower to William H. White, Westborough, Mass., and that upon Celery to William Frost, Jersey City Hights, N. J.

Hardy Herbaceous Plants.—The *American Agriculturist* has for several years endeavored to rescue these plants from the neglect into which they had fallen, since the introduction of newer styles in gardening. Holding that all plants have their proper places, we have advocated hardy plants in their place. In our endeavors to popularize these plants, we were met by the difficulty that those we recommended very frequently could not be procured. This state of affairs is, however, improving; we find that nurserymen and florists, generally, offer more hardy plants than heretofore, and last year we had occasion to notice a special catalogue by Hoopes, Brother & Thomas, Westchester, Pa., solely devoted to a large collection of plants of this class. This year we have the catalogue of Woolson & Co., Passaic, N. J., who propose to devote themselves solely to herbaceous and other hardy flowers. Mr. Woolson was formerly connected with our editorial department, and we can cheerfully testify to his competent knowledge and ability.

About Investing in Mines.—A new mining speculation is being actively prosecuted at present; as its headquarters are in New York, we receive inquiries about it from all parts of the country. These are so numerous that we must be excused from answering by mail, and we reply to those received, and endeavor to anticipate others, by telling what we know about the scheme here—and it will be perceived that this is very little. From inquiries of well-informed parties, we have no reason to suppose that the mining scheme referred to involves intentional fraud, but that, like many other things of the kind, it is put upon the market as a speculation, of which those who invest in it must take the risks. The affair is a speculation into which money can be put with the greatest ease; whether any money can ever be taken out, will depend upon future developments. Admitting that the affair is managed upon strict business principles, the risk and uncertainty remain.

Animal Poke.—F. M. Moulton, the patentee of an animal poke, writes, claiming that the poke illustrated in the *American Agriculturist* of January last, is an infringement of his patent. As no description of the patent poke is sent, we can not form any opinion of the justice of the claim, but give the caution as it is sent.

How to Choose and Work a Farm.—"W. B.," Bermuda. Allen's New Farm Book, (price $2.50), contains much practical information needed in choosing and working a farm, also description and management of stock, poultry, etc. Dwyer's Immigrant Builder, (price $1.50), contains valuable information as to the construction of the buildings needed on farms.

Quantity of Manure per Acre.—"T. W. E.," Hondo Valley, Texas. Very different quantities of manure are applied for different purposes. Thus 100 tons of barn-yard manure, or a ton of guano, may be used in a garden, and less than a tenth as much in farm culture, and each be right in its place.

Bit for Self-Sucking Cows—Sawing Machines, etc.—"M. J. A. C.," New Madrid, Mo. We neither make nor sell any of the contrivances described in the *American Agriculturist.* These are either the inventions of the editors, or of correspondents, who have no patents on them, and give them to the public for the general benefit. They are so clearly described that any mechanic can make them. Very full directions were given for making the bit for self-sucking cows in the *American Agriculturist* for July, 1876, which any blacksmith can follow, also for making the sawing machine, described on page 181 of *American Agriculturist* for 1875.

Averill's Chemical Paints.—In applying ordinary paint, it is well known that the oil sinks at once into the pores of the wood, leaving the lead, or other color, dead and barely adhering to the surface, and it requires at least two coats before a fair surface is produced. The "chemical paints" are so prepared that the wood does not take the oil away from the color, but even a single coat will dry with a good surface, and look quite as well as two coats of paint, mixed in the ordinary manner. We have outside work that was done some seven years ago with these paints, and it has worn in a most satisfactory manner. The colors, in a great variety of tasteful shades, for outside and inside work, are mixed ready for use.

Baling Manure.—"D. T.," Washington, D. C. Mr. Ackerman is not the inventor of the machine for baling manure. That is the ordinary Ingersoll hay, straw, or cotton press, sold by R. H. Allen & Co., 189 Water St., N. Y. It is now stated that the process of baling manure is no new invention, but has been in use many years. It seems strange that any person could receive a patent for baling manure in another person's straw press, but mysterious are the ways of patents.

Oats in Maryland.—"X.," Eastern Shore, Md. Ground for oats in your locality, and others similarly situated, should be plowed in the fall and left in ridges. The oats may then be sown in the spring, as soon as the ground is dry enough, and harrowed in immediately. There would then be no delay. It is very probable that the fall or winter oats, commonly sown in Virginia, would be better for your locality than spring sown. The seed of the fall oats can be procured of Messrs. Landreth & Sons, of Philadelphia.

Feather Eating Hens.—"C. F. H.," Bethlehem, Pa. The vice of feather eating is very frequent amongst fowls that are confined. To cure it under these circumstances is impossible. It is due to a perverted taste, caused by want of something, as well as to idleness, which is always productive of mischief.

To Prevent Hens Eating their Eggs.—"F. M. H." When a hen acquires a habit of breaking and eating eggs, there is no remedy. The only thing to do is to prevent the evil by killing the hen, or having the nest so arranged that the egg, as soon as laid, rolls away out of her reach.

Basket Items continued on page 153.

Horticultural Brevities.

The New Japanese Maples.—Those who have not seen these charming little trees, can have any idea of the exquisite beauty of their delicately cut foliage of a great variety of beautiful tints. Though some are of a feathery lightness, they are as hardy as a common Maple. These choice plants are now offered at reduced rates by S. B. Parsons & Sons, Flushing, (L. I.) N. Y ... **The Massachusetts Horticultural Society** offers prizes to the amount of $6,100, for the current year. Competition open to all. Send for schedule to the Secretary, Robert Manning, Boston.... **The Japanese Persimmon,** now attracting deserved attention in California, is a distinct species, *Diospyros kaki*, a large and very delicious fruit. It first fruited in this country in the garden of Mr. James Hogg, in New York city. It may be had, on the Atlantic side, of S. B. Parsons & Sons, Flushing, N. Y. John Saul, Washington, D. C., and P. J. Berckmans, Augusta, Ga ... **The N. Y. Horticultural Society** publishes a tempting schedule of Premiums for its spring and fall exhibitions, and for monthly shows. To be had of the Secretary, W. J. Davidson, Box 191, Brooklyn, N. Y.... **Catalogues** now-a-days are often useful horticultural treatises; an example in illustration of this is Ellwanger & Barry's special catalogue of Roses.... **Vick's Flower and Vegetable Garden** is not a catalogue in disguise, but a treatise on gardening, in which the author does himself credit, gives sensible talk, an abundance of excellent pictures, and all for 50 cents. It may be mentioned that Mr. Vick's address is Rochester, N. Y.

The New York Horticultural Society.

The regular monthly meeting was held at the rooms 55 West 33d St., New York, on Tuesday, March 6th, and as an important feature in these meetings is now an exhibition of plants and flowers, the numbers present were larger than at any previous meeting. Fifteen new members were elected, and Dr. Geo. Thurber, Editor of the *American Agriculturist* was elected an Honorary member. At this meeting a series of Essays or Lectures was inaugurated by Augustus Boileau, who gave a lecture on the culture and general management of fruit trees, particularly the methods of pruning and training, illustrating the process by actual specimens, which he handled in a way to show that he was master of the art. Mr. Boileau is well known in the city as a Practical Horticulturist, being superintendent of the grounds around Trinity and St. Paul's churches, and to his enthusiastic taste is due the gorgeous displays that have been made in these for 7 or 8 years past.—The premium awarded for Hyacinths was to Wm. C. Wilson, Astoria, L. I. For Azaleas in pots to Wm. Bennett, Flatbush, L. I. For collections of cut Violets and Azalea blooms to George Such, South Amboy, N. J. To Isaac Buchanan, Astoria, L. I., for cut blooms of Orchids. To James Ridder, Inwood, N. Y., for cut blooms of Cinerarias and Stock Gilliflowers. To Wm. Bennett, Flatbush, L. I., for fine specimens of *Dendrobium nobile*, and to Thomas Ascott, Flatbush, for a collection of English Primroses. To Thos. Tait, Port Richmond, S. I., for a fine collection of succulent plants. A fine plant of the new Orchid, *Phalænopsis Schilleriana*, was exhibited by James M. Patterson, Newark, N. J., and cut sprays of *Bougainvillea glabra*, *Oncidium luridum* and fine specimens of Camellia blooms by S. Henshaw, New Brighton, S. I. An exquisite specimen of *Lilium longiflorum*, and an immense flower spathe of the famous Aroid, *Amorphophallus Rivieri*, from the C. L. Allen Co., of Queens, L. I.—The meetings are held at the place above named, on the first Tuesday in every month. The next will be held on Tuesday, April 3d The subject of the Essay for that day, then to be given, will be on "Ornamental Designs in Flowers," by David Foulis, New York

Old Seeds with New Names.

We learn that the parties engaged in pushing the "Pampas Rice" do not like what we have said about it, and have published their views about us in some paper which we have not seen. We have no reason to modify what we have said. We claim that the article offered as "Pampas Rice" is not a *rice* at all, and further, from our examination of the seeds, we are very confident that it is a form of "Durra," or *Sorghum vulgare*. It will be remembered that our remarks had no reference to the plant itself which has its uses, but we most positively protest against giving old and well-known plants new and deceptive names. Success in farming, gardening and fruit-growing of all kinds, largely depends upon accuracy in the names of the seeds, trees and plants, and any one who intentionally sends out a poor variety, under the name of a good kind, or who attaches to an old and well-known variety a new name, not only deserves exposure but could intentional fraud be proved, the seller could be made to pay heavy damages. There is much of this

FRAUD UPON FARMERS,

in offering old seeds under new names, practiced every year. Whenever it is practicable, we follow up the new and wonderful seeds. Sometimes we get them, and sometimes, like the chap with his wonderful Broom Corn, we send the money and get no seeds. We have received several hand-bills or posters, setting forth the claims of a wonderful wheat; they read: "The attention of farmers is called to our

NEW SPRING WHEAT!

Single grains measuring One-Half Inch in Length, and the Average close to that." The seed came from Valparaiso two years ago. The parties in Tennessee own the entire stock on the continent. It has "Produced this season 63½ Bushels on Half an Acre," and other things are said in its favor. We sent our 25 cents for a sample package and in turn received 25 grains of wheat, but the package was marked in large type "Touzelle Spring Wheat." The advertisement, or hand-bill did not announce it as "Touzelle," but as a "New Spring Wheat," and nothing said in the description about Touzelle, though at the bottom of the hand-bill there is, in small type, a certificate from some people who have "seen single grains of Touzelle Spring Wheat, which measured one-half inch in length." This, the only mention of Touzelle, is introduced in such a way that one might readily overlook it—as we did—at the first reading. Now, in this case, we have not a word to say against the wheat itself, but to the manner of bringing it out. If this wheat is "Touzelle," why not say so in the advertisement? But "Touzelle" is a name already applied to a well-known *wheat*, which has been in the country for nearly ten years, or long enough to show that is not adapted to general cultivation. If this is a spring wheat derived from the ordinary Touzelle, why not say so? The whole thing is surrounded with doubt, and is presented in a most unsatisfactory manner. The statement of a yield of 127 bushels to the acre we pass without comment, though every wheat-grower will have his own notions on this point. We are very much in favor of the introduction of new and promising varieties of wheat, and all other seeds, but they should be presented in a manner that will not be open to suspicion.

The Prickley Comfrey Once More.

When a new plant is offered, or an old plant is presented for a new use, we hold it our duty to give an account of it, and from the best sources, trusting that our readers will have the intelligence to decide whether it is worth while for them to try it or not. Before we published a word upon the subject, we had read sufficient in the English and French agricultural journals to convince us that it was worthy of trial here; but it was only after it had been tried for one year or more in this country, and we found that plants could be had that we published it....A New England paper is disposed to grumble over the matter, and his strong point is that Prof. Gray characterized it as a "weedy" plant. Of course he did, and had he been asked to describe either the Jerusalem Artichoke, or the Hubbard Squash, he would naturally say that they had coarse, weedy foliage. It is harly fair to thus try to put Doct. Gray in a position of antagonism to the plant. ....Another person finds that it will become a weed. How this may be, time only can tell, but we have not noticed that carrots and parsnips are any the less grown, because the plants, when they escape from cultivation, become miserable weeds....Did not we have abundant evidence that people *do* read advertisements, our experience with the Prickley Comfrey would lead us to doubt if people really do read them. Several have written that they have searched all through the March No., and could not find it advertised, while the advertisement of R. H. Allen & Co. occupies a conspicuous place at the top of the middle column on page 112, and reference is made to the advertisement in a Basket Item on page 87, which we put in for the very purpose of stopping the flood of inquiries that poured in upon us.

N. B.—Take Notice, Everybody! We have neither plants nor seeds of Prickley Comfrey nor any other plant for *sale*. Prickley Comfrey was advertised on p. 112 in March last. We are informed by the gentlemen in charge of our Advertising Department that the plant will also be offered by Mr. O. E. Ashburner, of Richmond, Va., the gentleman who furnished the account of cultivation given in January last. Finally, we have no new facts in relation to the plant, beyond what we have already given. It will be this year tested over a wide range of country, and the results will go far towards settling its real value to the American farmer.

Bee Notes for April.

BY L. C. ROOT, MOHAWK, N. Y.

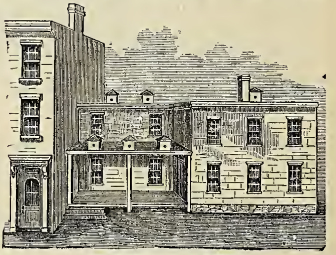
During the present month, most bees will be placed upon their summer stands. Heretofore, a day when bees could be removed from winter quarters was anxiously looked for, but, at present, it is considered desirable by many to defer it as late as possible. If the temperature of the room containing the bees can not be kept as low as 50°, it will be well to remove them to their summer stands during the first fair days, but if they can be kept below that temperature, I would say, keep them in as late as the first of May. It would be better yet to say, take them out when Soft Maple blossoms. Last spring I placed my bees on their stands the first days in May, and they brought in natural pollen the same day. As soon as the bees have taken the first flight, close all ventilation, and be sure that the mats are held snugly over the frames, if such are used. Contract the entrance, leaving an opening of about one inch.

Questions and Answers.

City Beekeeping.—"M. J. B.," of Philadelphia, Pa., asks: "Is bee-keeping possible in the city; if so, under what circumstances?"—This is a question of quite general interest, as I receive many inquiries in regard to it. That bees can be successfully kept in cities, has been proven beyond a doubt. Whether they may be expected to store a large or small quantity of honey, will depend upon the surroundings, as it does in country locations. Very many will argue that, if they have an abundance of flowers in their own yard, they may expect to keep bees successfully. They do not realize that, from preference, bees will work from half a mile to three miles away, and that if honey may be found, they will work even double that distance.....C. F. Muth, of Cincinnati, O., has 26 swarms of bees on the roof of his store, and reports a yield of 181 lbs. of extracted honey from each. The forage there must be remarkably good, as this is a very large yield. In New York and Brooklyn, bees are being kept to advantage. From what I know of Philadelphia, I should say that bees could be kept there successfully. As to where the hives may stand, I should think that there were very few who could not find room for at least one swarm. A very small plot of ground will accommodate them, or they may be placed before any window in an upper room, or attic, or even on the roof. In the village of Ilion, a mile from my home, are several swarms arranged on the roof of a piazza, and of the house, as shown in the engraving here given.

I see no reason why city people may not find bees a source of instructive amusement if not of profit. A hive may be arranged with glass sides, so that the bees may be seen building their combs and storing honey.

A case is mentioned where a teacher in a city school kept a hive in the garret of the school-house, where the scholars were allowed to see the bees at work. Certainly good must come from such observations. What the returns will be, must depend upon the forage that surrounds the location, and the intelligence with which the bees are managed.



ARRANGEMENT OF HIVES.

Extracting in Spring.—"Will it be expedient to extract in early spring, combs heavy with honey, or replace them with empty combs, to facilitate breeding? I use eight Langstroth frames."—I would not extract in early spring. If the capping of the cells is broken occasionally, the bees will remove the honey to the center, and breeding will be thus stimulated. All the old honey in the hives may generally be used in this way. If properly managed, each of the eight frames should contain brood during the best of the season.

Structure of the Roof.—"In using the flat roof described in January Notes on a Quinby hive, with the frames in for extracting, ought not the sides and end of the roof to have pieces nailed on them, so as to make a tight cover, or will this be unnecessary, if I use a quilt on the top of the frames?"—It will not be necessary, as there is a top to the hive, under the roof.

Kind of Quilt.—"If I use a quilt on top of the frames, is one filled with chaff as good as one in which cotton is used?"—Cotton is preferable.

Correction.—In March Bee Notes—"Are six combs (Langstroth) enough to be left *on* the hives"—should be "*in* the hives."

Ask Questions of Your Soil.

What a wonderful help it would be to every cultivator, if he could say to this soil and that one, "tell me what you are made up of; what is lacking in your composition to make you grow a good crop of this or that kind," and the soil should answer: "I lack potash," or "I lack phosphoric acid," or "I lack lime," etc. With such answers we could go right to work and supply the deficient element or elements. Now it is guess-work. We put on stable manure, and as that generally contains all kinds of needed elements, it produces good results. Yet, in doing this, we often add a great deal that is not needed, as soils usually lack only one or two elements. Stable manure, if purchased, is one of the most costly fertilizers in fact, or would be, if we knew just what else to buy. In all the older States we need, or could very profitably use, much more manure than can be obtained. Now comes the all-important question, *what* shall we use—what will be the cheapest and best paying fertilizer? Formerly agricultural chemists proposed to analyze our soils, and tell us what was lacking; but they now know that in the present state of agricultural chemistry, at least, that this is not practicable. The fertilizer manufacturers come along, and tell us, each in turn, that his article is just the thing we need. We try this one, and then that one, at a great deal of expense, sometimes with good results, and sometimes quite otherwise. In the former case we go on and buy and use more. A neighbor, having a different soil, follows our example, and fails, and is disgusted, not to say discouraged. If we fail in our first trials, we too are disgusted, and pronounce all artificial fertilizers, and agricultural science itself, a humbug. But even when we succeed, we are not sure that we have got the best or cheapest fertilizer. Something else might have furnished *our* soil with just what we wanted at half the cost.

Now the best way to get at the root of the matter is, not to go into costly experiments, buying by the ton, or score of tons, a fertilizer that is highly commended, but to put a few simple questions to our fields, in the form of experiments that any ordinary cultivator can carry on at small cost, which, if made carefully, will afford a large amount of most important information. In an average field, lay off a few long plots, and try on one plot a single fertilizer, another on next plot, and so on, using various mixtures of the fertilizers on some plots. Across these plots plant or sow several leading crops, and watch carefully the effects upon each, of the different fertilizers. A single trial of a season, will give a great deal of information; while repeated trials will be of still greater value. Thus ascertaining what will pay best, we can, in future, buy and use largely just that fertilizing element, and only that one, or only those which are needed. If potash is the thing, we shall not have to buy and pay for a lot of other things, to get what we want. The chemists can tell us accurately what is in this or that fertilizer, and whether we get what we pay for, or intended to. The cultivators who make these experiments—who thus ask direct questions of the soil—will be the most successful, and they should be begun at once. For directions in making such experiments, see Prof. Atwater's article in another column, "Science Applied to Farming."

Ogden Farm Papers.—No. 86.

BY GEORGE E. WARING, JR.

I have a letter from the Pacific Slope which reads thus: "Enclosed you will find one dollar for that amount of Prickly Comfrey, that you and the Editor speak of in the *American Agriculturist.* You did not say you had any for sale, but I thought it was a sly way of advertising it. If you have none for sale, please send my letter to some one that has, as I am anxious to try it in this dry climate. If it should do well here, it would be a great benefit to this country. Please answer these questions: Who manufactures the best machines to underdrain with? How large a drain do they make? How many rods can be made per day, and at what cost per rod?"

Those who have read the advertisements of books in the *American Agriculturist*, and those who know the conspicuous character of the inducements offered for forming clubs of subscribers, will probably agree with me that the *American Agriculturist's* way of advertising is not a particularly sly one, and I think I am safe in saying that if any hired writer in the establishment were to attempt the sly game in advertising his own business, "the Editor" would be very likely to draw a *broad* pen through that part of his article before it went to the printer. Slyness is not a style that seems to be cultivated in that establishment.

My interest in the Prickly Comfrey is two-fold. First, as a farmer I am interested in securing the best and cheapest forage for my herd.—Second, as the writer of these papers I am obliged to cultivate a quick eye for whatever promises to be of advantage to my readers. It is a question of bread and butter with me to earn my wages as a writer, and I have learned by experience, that the inexorable editor of the *American Agriculturist* is sly enough to insist on his subordinates hunting out and describing fully and fairly, all new and valuable topics. I thought the Prickly Comfrey would "score one" for me in this account. That is all. I have no sets for sale, nor shall I be likely to have until the market is so generally supplied that the price will be too low to make the sale of sets worth while.

The best ditching machine yet devised, is a broad-backed, stout-armed Irishman, who has been brought up to the work. His place on the Pacific Slope could probably be well supplied by the use of Chinese cheap labor. I think among the numerous inventions for the purpose, which have been more or less successful, much the most promising seems to be Gov. Randolph's ditching machine, which has been well tested, and which is advertised and described in the March *American Agriculturist.* The maker's address is given in the advertisement. I have seen only the model, but I have heard good reports of its work from an eye witness, and think that the machine is sufficiently promising to justify its being tried.

The tendencies in all industries are getting to be more and more in the direction of coöperation. I have occasionally, during the past year, suggested coöperative action of farmers who retail milk from their wagons in towns. Since my former notice of its work, I have received the full report of the Onondaga Dairymen's Association, which began business in the city of Syracuse, in 1872, and has been in successful operation since that time. It is a large Association, with a cash capital of about $30,000, owning the necessary horses and wagons, and having a factory for the disposal of so much of the product as is not needed for the retail business. In this factory both butter and cheese are made. The employees of the Association are boarded at the establishment, and as the supplies are bought at wholesale, and the house is carefully kept, it is found that the average expense of board per month is $9.44. Incidentally this may be valuable information for farmers who make an allowançe for board to their hands. The Association has taken up 39 private routes, which had formerly required 39 horses, wagons, and men—many of the men being farmers themselves. The business has now been carried on for 4 years with increasing success, and it has demonstrated the important fact that the farmers *net* more for their milk, without counting the value of their own services at home, than they did under the system of private routes.

Milk must be delivered at the depot at a fixed hour of the morning. That which arrives after that hour, is credited at "cheese rates." Regulations for the cooling of milk are enforced. Weekly tests are made of all that is delivered, and when it falls below the standard, a discount is made from the aggregate of the week's delivery. When it falls so much below the standard as to indicate adulteration, a penalty is inflicted. The drainage and ventilation of stables, their cleanly keeping, the clean bedding of the cows, and a pure and wholesome supply of food and water, are insisted upon—other details looking towards extra cleanliness, also receive attention.

The stock of the Association is apportioned to the members on the basis of $20 for each cow usually kept by them, thus insuring in the division of *profits* according to capital stock, a fair dividend to each farmer. The credit for the milk deliveries is according to quality, thus making it for the interest of each farmer to keep good cows. So complete a system as this is only practicable among farmers who live near a large town, or who can supply a more distant city regularly by rail, but there are hundreds of cases where a dozen or more farmers drive daily over little peddling routes in their neighboring market-towns, delivering all together not more than could be easily delivered by one-fourth their number. If such farmers would unite, under regulations which would ensure a fair division of returns according to the amount of milk furnished, they might save at least one-half of the wear and tear of vehicles and teams, and at least three-fourths of the value of their services, and escape the tedious work of delivery.

We hear a good deal about hard times, though less, I am happy to say, in connection with farming than in the other industries of the country. If there ever was a time when the prosperity of the country depended mainly upon its agriculture for the exportation of produce it is the present,—agriculture has thrown the balance of trade $113,000,000 in our favor,—according to the President's recent message in favor of resumption. One item of our foreign trade is full of encouragement,—that is the exportation of fresh meat to England, where there arrived in a single week in January last, at the port of Liverpool alone—in addition to large invoices of butter, cheese, bacon, hams, salt beef, pork and lard—fresh beef and mutton, equivalent to 10,000 sheep and 1,400 steers.

The facility for transporting fresh beef (at a temperature of 38° or less) is constantly increasing, and the demands keep pace with it. The product has not yet become so recognized as being first-rate, that it is sold as of English production, as our cheese often is, but it has found its way into the best markets, and there is much significance in the following anecdote from a communication to the "London Farmer": A gentleman who was anxious to taste fresh American beef, went to a butcher, who made it a specialty. He was asked who was his regular butcher.—"Oh! so and so, and we have no reason to complain, as he sends us the best Scotch beef he can buy."—The butcher remarked to a friend that the man in question had got all of his best Scotch beef from America for eight months past.

The attention that the subject is attracting in England, is very significant. Not only do butchers and farmers discuss it, but the subject is taken up by political economists, essayists, and members of Parliament. It is compared with the admission of foreign grain by the repeal of the corn laws. Arguments are advanced to show that, just as the introduction of foreign corn was followed by the cheapening of living, an increase of industry which aggregated a larger demand for better food and so improved the farmer's business), so the cheapening of meat will lead to a still further advance of prosperity, in which the farmer can not fail to participate.

Probably this is true, and it is important for us that it is so, for the foreign demand for our meat has come to this country, "and it has come to stay." It is as important for us that the English people should remain prosperous and be able to buy our meat, as it is important to the English farmer that the ability to buy his product should continue. That this foreign demand, so long as it remains, must add to the cash returns of American agriculture, is undoubted, and there has never been a time when the out-look of the farming interest in this country seemed to be so promising, and so firmly based as it is to-day. Let it only be borne in mind that as the profits of farming increase, the profits of *good* farming will increase in the greatest proportion. Do everything in the best way, and invest all the capital needed to improve the way, only be extremely cautious in making the investment a judicious one, and especially so when it is made with borrowed money.

Science Applied to Farming.—XXVIII.

Farm Experiments with Fertilizers—Suggestions and Directions for making them.

Since the chief use of commercial fertilizers is to supply the materials which crops need, and atmosphere and soil fail to supply, it is evident that to use them economically, we must know what materials are deficient in the soil where they are to be applied. This can best be learned by direct experiments—by putting the question to the soil with different fertilizing materials, and obtaining its reply in the crops produced.

For experiments by which any intelligent farmer can test the needs of his soil, without great cost or trouble, I would suggest a series in which the action of the three substances, nitrogen, phosphoric acid, and potash, should be tried separately and in combination, and, at the same time, the effect of plaster, lime, and stable manure, be studied. Nitrogen can be conveniently supplied by dried blood or nitrate of soda; phosphoric acid by a high grade superphosphate; and potash by a high grade German potash salt, (sulphate or chloride). Freshly slaked lime, plaster, and stable manure can be employed in quantities such as would, under ordinary circumstances, make an economical manuring. The most satisfactory results will be obtained on soils that are poor either originally or from cropping. On stronger soils, or those in better condition, the effects of the different articles will be less manifest.

As to size of plots, 10 square rods, ($^1/_{16}$ of an acre), will suffice for each. They should be long enough to extend through a considerable portion of the field, so as to escape, as far as possible, the influence of inequalities of different portions of the soil. Level land is best for the purpose. If a slope be selected, the strips should run up and down the ascent, so that any wash by rains will not transfer materials from one plot to the other. An unmanured space, at least two feet wide, should be left between the strips. Parallel trials should always be made with no manure, for the sake of accurate comparison. In applying the manure, the greatest care must be observed to insure a uniform distribution and thorough mixing with the soil, and to prevent the manure belonging to one plot from getting on another. In the use of concentrated fertilizers as ordinarily practised, there is apt to be great waste from lack of even and thorough distribution through the soil. They should not be left in lumps or concentrated in small spaces, to injure the roots which come in contact with them or with their strong solutions in the water of the soil, but should be so uniformly and thoroughly distributed that the largest number of roots may have access to them. And since in these experiments it is particularly important that the effect of each fertilizer be fairly tested, it would be by all means advisable to mix them, at least those which contain the nitrogen, phosphoric acid, and potash, with once or twice their bulk of mellow earth. If the latter is rich in vegetable mold, so much the better. Moist saw-dust may be used in place of the earth, if more convenient. The fertilizers should be applied as long as practicable before the seed is put in. It will be well to even off the ground by a shallow plowing, spread the fertilizers uniformly over the plots, and then work them in with a good, deep-running harrow, or turn them under by shallow plowing. When the plots are accurately staked out and the fertilizers carefully applied and worked in, the plow or harrow may be run across the plots without fear of transporting the fertilizers from one to another. Corn, potatoes, and root crops can easily be treated in rows, and grain in drills. I would suggest the following arrangement —the plots being each ten rods long, and one rod wide, running parallel to each other, with strips two feet wide between each two plots.

Plot 0. —No manure.
" I. —Nitrogen—in the form of 20 lbs. of Dried Blood (A).
" II. —Phosphoric Acid—in the form of 20 lbs. of Superphosphate (B), with 15 to 17 per cent phos. acid.
" III. —Potash—in the form of 20 lbs. of Sulphate of Potash (C), with 40 to 46 per cent actual potash.
" IV.*—Nitrogen and Phosphoric Acid } in form of 10 lbs. each of A & B.
" 00. —No manure.
" V.†—Nitrogen, Phosphoric Acid, and Potash } in the form of 6⅔ lbs. each of A, B, and C.
" VI. —20 lbs. of Plaster.
" VII. —40 lbs. of fresh slaked Lime.
" VIII. —Stable Manure, moderate quantity.
" 000. —No manure.

* The Mixture of Dried Blood and Superphosphate, on Plot IV, would be equivalent to a high grade Superphosphate—superior indeed to any in the market, except a few of the very best.——† This mixture on Plot V would be nearly or quite a "complete fertilizer."

For the artificial fertilizers I would recommend only the high grade articles, both because they are generally cheapest, and because they will be fairest for the tests. Nitrate of soda or sulphate of ammonia could be used to furnish nitrogen, instead of dried blood, and would work somewhat quicker. Indeed, to stimulate the growth of grass and grain crops, they are excellent. The chloride of potassium, or "muriate of potash," as it is often called, is less costly than the sulphate of potash, and may be substituted for it. The only objection to the chloride is, that its effect on the quality of certain crops, as potatoes, sugar beets, and tobacco, is not as favorable as that of the sulphate.

The quantities, 20 lbs. for $^1/_{16}$ acre, or 320 lbs. to the acre, are smaller than many farmers employ, but will suffice for the experiments. It must be remembered that these articles are more concentrated than most farmers are in the habit of using. The cost of these articles, in small lots as above, will of course be greater than when bought by the ton.*

I have drawn up a table, showing what would be the amounts, composition, and cost of the articles recommended, if used in considerable quantities, at the rate of 320 lbs. to the acre. The prices are those at which ton lots could be bought in the large markets, for cash, plus $5.00 per ton for freight.

Number of plot.	FERTILIZER USED.				FURNISHING VALUABLE INGREDIENTS.			
	KIND.	lbs. per Acre.	At price ℔ ton	Cost per Acre.	KIND.	As'umed per cent.	lbs. per Acre.	Cost per lb.
I.	Dried Blood	320	$45.00	$ 7.20	Nitrogen	10	32	22½c.
II.	Superphosphate	320	$40.00	$ 6.40	Phos. Acid, soluble	16	51	12½c.
III.	Potash Salt "Muriate"	320	$65.00	$10.40	Potash	50	160	6½c.
IV.	Dried Blood	160	$42.50	$ 6.80	Nitrogen	5	16	
	Superphosphate	160			Phos, Acid, soluble	8	25½	
V.	Dried Blood	106⅔	$50.00	$ 8.00	Nitrogen	3.3	10⅔	
	Superphosphate	106⅔			Phos. Acid, soluble	5.3	17	
	"Muriate of Potash"	106⅔			Potash	16.7	53⅓	

The proportions could be varied at pleasure. Some might prefer to arrange the amounts of the different articles so that the costs should be the same, as below:

Number of plot.	FERTILIZER USED.				FURNISHING VALUABLE INGREDIENTS.		
	KIND.	lbs. per Acre.	At price ℔ ton	Cost per Acre.	KIND.	Assumed per cent.	Po'nds per Acre.
I.	Dried Blood	304	$45.00	$6.74	Nitrogen	10	30 2-5
II.	Superphosphate	336	$40.00	$7.72	Phos. Acid, soluble	16	53 3-4
III.	Potash Salt "Muriate"	208	$65.00	$6.76	Potash	50	104
IV.	Dried Blood	152	$42.06	$6.73	Nitrogen	4.7	15 1-5
	Superphosphate	168			Phos. Acid, soluble	8.4	27
V.	Dried Blood	101.3	$48.14	$6.74	Nitrogen	3.6	10.1
	Superphosphate	112			Phos. Acid, soluble	6.3	18
	"Muriate of Potash"	693			Potash	12.3	34 2-3

The surest test of the deficiencies and supplies of plant-food in a given soil will be made by continuing the experiments for a number of years, through an ordinary course of rotation for instance, using the same fertilizers on the same plots year after year. At the same time, a good deal can be learned from a single trial. And even if, in the hurry of harvest time, the crops are not carefully weighed, the thought and study involved in the inception of the experiments and watching their progress, will be full of instruction.

Such experiments do not, it is true, tell exactly how much of a given fertilizer will be most profitable, but they will indicate, if carefully and thoroughly conducted, what substances are abundant and what lacking in the soil, and, consequently, what ones it will be best to buy, and what ones not to buy in fertilizers.

Variations from the plan suggested above will of course occur to every thinking farmer. The size of the plots may be varied, other kinds and amounts of fertilizers used, or the plan otherwise altered, as may seem best. And it must be borne in mind that drouth or other causes may interfere with the results, and that these will be made surest by repeating the experiments in successive years.

W. O. Atwater.

Wesleyan University, Middletown, Conn.

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* Dried blood, with say 10 to 11½ per cent nitrogen, corresponding to 12 or 14 per cent ammonia, will cost, in small lots, probably about 3 cts. per lb. In lots of not less than a ton, it could be bought, I think, for $40.00 per ton cash. An article with 10 per cent nitrogen, or 200 lbs. to the ton, would bring the nitrogen at 20 cts. per lb. Nitrate of soda, of 95 per cent purity (about 15⅔ per cent of nitrogen), is offered at 4 cts. per lb., or in ton lots, for cash, at from $75 to $80 per ton; the nitrogen would thus come to a little over 25 cts. per lb. Sulphate of ammonia, with from 20 to 20½ per cent of nitrogen, is offered at about 5½ cts. per lb., or, in large lots, for cash, at $95–$100 per ton. An article with 20 per cent of nitrogen, at $100 per ton, would bring the nitrogen at 25 cts. per lb. Superphosphate from spent bone-black, with 15 to 17 per cent soluble phosphoric acid, is offered at about 2½ cts. per lb., or in ton lots, for cash, at $33 to $35 per ton. An article with 16 per cent soluble phosphoric acid, or 320 lbs. to the ton, at $35.00 per ton, would furnish the phosphoric acid at about 11 cts. per lb. It is offered at about this price in superphosphates, made from South Carolina rock and other fossil and mineral phosphates. Sulphate of potash, with 80 to 85 per cent of pure sulphate, corresponding to 43 to 45 per cent actual potash, is offered at in the neighborhood of $70 per ton cash, which would bring potash at 8 cts. per lb. "Muriates," with 80 to 84 per cent of chloride of potassium, corresponding to 50 to 52 per cent actual potash, are offered at $60 or less per ton cash. At this rate potash would cost about 6 cts. per lb. The prices above given are such as have been paid in Boston and New York by Connecticut farmers, for articles of which samples have been analyzed at the Experiment Station here. The costs at places remote from the markets would, of course, be increased by freights. Dried blood and superphosphate from spent bone-black are, at present, exceptionally cheap articles, and would, if any considerable retail demand should spring up for them, be apt to rise in price. Peruvian guano will supply nitrogen and phosphoric acid with a little potash in the best forms and at extremely low cost. As sold in this State during the past year, it has been the cheapest source of those ingredients which has come under the notice of our Station, except half dry fish-scrap, an article too crude and wet to warrant distant transportation.

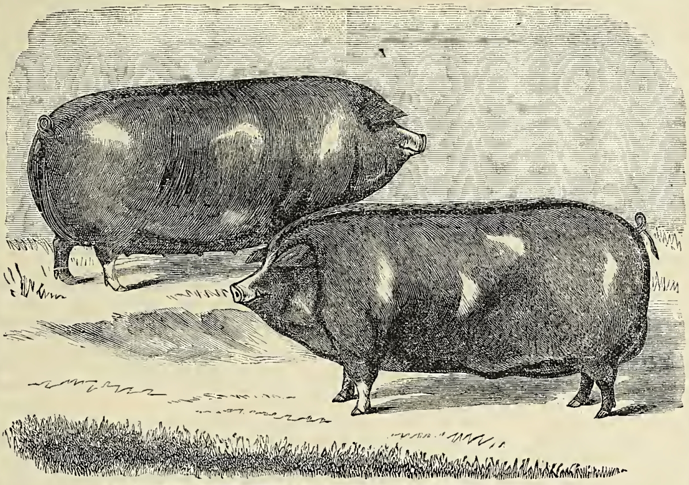
The Carolina Parrot, or Paroquet.

(*Conurus Carolinensis.*)

Inquiries as to our native Parrot can be best answered by the picture on the first page, and a brief description here. We can not undertake to decide whether our bird is properly a Parrot or a Paroquet, or, as some write it, "Parrakeet," as ornithologists differ as to the common name, some using both terms indiscriminately. The bird has a length of 14 inches, and its spread of wings is 22 in. The peculiar form of bill, the structure of its claws to adapt it to climbing, in which it also uses its bill, and its brilliant colors, readily distinguish this from all other native birds. The general color of the plumage is emerald green, with bluish reflections; the edge of the wings yellow, spotted with black; the neck and back part of the head are bright-yellow, while the fore part of the head and cheeks are red, against which the large white bill shows very distinctly. The sexes are so much alike that it is very difficult to distinguish them. They make their nests in the hollows of trees, and it is said that several females deposit their eggs in the same nest. This bird is rapidly disappearing; formerly it was not rare around Lakes Erie and Ontario, but at present it is mostly confined to the Gulf States, except in the far West, where it reaches a much higher range, occurring occasionally in Iowa, and is found along the Missouri River. It is stated that a flock of Parrots was seen near Albany, N. Y., in January in 1790, an occurrence so unusual that it was regarded as ominous. Their rapid disappearance is no doubt largely due to their destructive character. Among wild plants they are especially fond of the seeds of the Cockle-bur, (*Xanthium*), which they devour most industriously, and did they confine themselves to this, they would be useful; but they are fond of grain, and devour large quantities, and are also exceedingly destructive to fruit; apples and pears they take only for their seeds, and often destroy large quantities of the fruit before it is ripe in the search for seeds, they also devour nuts, grapes, and other fruit. The Parrots come in flocks, and when they alight upon a grain stack, they are in such numbers as to make it appear as if covered with a brilliant carpet. Shooting, no matter how many are killed, does not frighten them away, for they return again and again, though hundreds of their companions are slaughtered. They fly in flocks, aways screaming when on the wing. When wounded they are very ferocious and can bite severely. They are very readily tamed, but can not be taught to articulate, while their disagreeable voice, which is not allowed to suffer for lack of practice, makes them undesirable as pets. When young they are regarded as good for food. Since it has become fashionable to use bright plumage in trimming women's hats, and for other decorations, thousands have been shot for this use by persons who have gone to Florida and other Southern States for the purpose. Those who are familiar with their rapid destruction, think that they will, before long, become exterminated.

The Poland-China Swine.

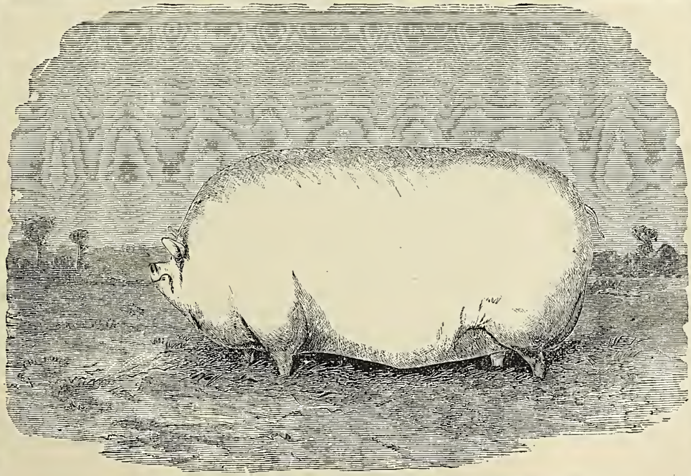
There are few so striking instances of the successful production of a breed of animals, fitted for a particular purpose, as that presented by the Poland-China swine. The actual addition to the material wealth of the country, during the years since this breed was produced, has amounted to hundreds of millions of dollars! Of the 25,726,800 swine existing in the United States in January, 1876, there were 14,387,400 in the States of Kentucky, Ohio, Michigan, Indiana, Illinois, Iowa, Missouri, Kansas and Wisconsin; and these may be valued at over $100,000,000. Of these, by far the larger portion are Poland-Chinas, or grades of that breed. It is unnecessary therefore to enlarge upon the economic importance of the breed. Some writers have cast doubt upon the claims of these swine to rank as a distinct breed. We are clearly of the opinion that the claim is perfectly well founded. If four or five crosses will entitle a Shorthorn to entry in the Herdbook, and to the title of "thorough-bred," one cannot doubt that a class of swine, which has been carefully bred by skillful and intelligent men for many years, is quite as well qualified to be called thorough-bred. As to the variation in style or character of these swine, which is so much talked of and written about, the same may be said with equal force of the Berkshire or Essex breeds of pigs, or of the very ancient and undoubted Southdowns amongst sheep. At any rate it is hardly necessary to discuss the question, after it has been judicially decided by the "National Swine-breeders' Convention;" and it is but a waste of time for those who have no interest in the breed to call in question the decision.



POLAND-CHINA SWINE—BRED AND OWNED BY D. M. MAGIE, OXFORD, OHIO.

The character of this breed may be easily seen and appreciated, from our engraving, which represents a pair of swine, bred and owned by D. M. Magie, of Oxford, Butler Co., Ohio, with whom, it is claimed, this breed originated. It is only fair to say that this claim is contested by other breeders, but with what justice it is not our purpose here to discuss. However this may be, there is no doubt that much credit belongs to Mr. Magie, who has bred these swine carefully since the year 1837. Forty years of continuous history should have some weight in considering the purity and stability of this breed. Since that early period, these hogs have been steadily growing in favor, and at the yearly exhibitions furnish a very large majority of the swine presented for exhibition. In the Western, North-western and South-western States, the Poland-Chinas outnumber all other varieties combined, and it is in these districts that they are chiefly kept. This breed was originally founded by variously crossing the "Irish Grazier," the "Byfield," the "Poland," and the "Large China" breeds; and in addition, there has been considerable Berkshire blood infused into it. By careful improvement the breed has been much refined; the bone has been reduced in size, while the size of the animal has been enlarged, and its capacity for feeding and making flesh, with early maturity, has been increased. They are quiet and docile, prolific breeders, and the sows are good nurses. They fatten readily at any age; at 18 to 20 months may be made to weigh 500 to 600 lbs., and at 10 to 12 months they have frequently dressed 350 lbs. The carcass is long, round, well proportioned; broad in the back, and deep in the sides; the legs are short, the hams and shoulders are heavy, thick, and square; the hair is thick and fine, in the best specimens; in color they are spotted with black and white, the black greatly predominating; the ears are drooping; and when they have been carefully bred, these hogs are of a good style and handsome form. The specimens of which the portraits are here given, are from a herd of nearly 500 head, from which animals are shipped to nearly every State in the Union, many of this breed being now kept in all of the Eastern and Middle, and in some of the Southern States. Before the Swine-breeders' Convention adopted the present nomenclature for this breed, it was known in some localities as the "Magie," and in others as the "Butler County" hogs, the first name being from the earliest and most prominent breeder, and the other from the county where they were first most extensively bred. Other names have been given to the breed during their earlier history, these having arisen through local circumstances chiefly. But all these names are now dropping out of use, and it is doubtless better that they should do so, an appropriate and acceptable name having been found for the breed. The future development of the business of growing pork is a difficult thing to forecast. It is hardly to be doubted that it must in time grow immensely. To reach its most profitable condition, there must be a breed of hogs of sound, vigorous constitution, ample feeders, with good digestive powers, of rapid growth, and quick maturity. With the possession of the Poland-China breed, it needs only proper sanitary regulations as regards feeding, watering, pasturing, and housing, to make the business of raising and feeding hogs in the great corn-growing States the most profitable branch of agriculture. Certainly nothing is so much wanted just now, as the best sanitary treatment, to preserve the stock we produce.

White Lancashire Swine.



A WHITE LANCASHIRE HOG—OWNED BY WM. G. LEWIS, FRAMINGHAM, MASS.

The English county of Lancashire has long been noted for its excellent breed of swine. These animals have always been white in color, of rapid growth, good form, and, when mature, have reached a very large size—600 to 700 pounds being a not unusual weight. Recently the Lancashires have been much improved by careful breeding. Amongst other breeders, the Earl of Ellesmere, a resident of South Lancashire, has given much care to their improvement, and has taken premiums wherever his animals have been exhibited. Some important improvements have been made in the breed, prominent amongst which are their earlier maturity, and the reduction in size and weight of the offal, such as the head and feet, and other unsalable parts. The portrait given on this page is from a photograph, and represents a hog which is as near a model one as can well be produced. A trio of this breed was presented by an English friend to Wm. G. Lewis, of Framingham, Mass., to whom we are indebted for the photograph, from which the engraving was produced. Since their introduction into America, these pigs have been very healthy, and have proved to be hardy, profitable to keep, and suited to our climate.

Among the Farmers.—No. 15.

BY ONE OF THEM.

What are the Best Stable Floors?

When I bought my farm I found the stable floors laid with cobble stones, bedded in clay. I don't know why it was not a tolerably good floor. The stones were small; there was a slight slope to the rear; and it could be brushed out and washed out easily—but it was distasteful to me. It became saturated with urine, and there was some smell of ammonia; I thought it was too hard a bed for the horses, and not easy for them to stand upon, and that they would pound their feet all to pieces in fly time, and so I laid a floor of oak plank. At one time, not long after, the horses' feet got very dry, and the blacksmith, of course, suggested earth floors.—"Do your horses stand on the ground?"—"No."—"I thought not."—That was enough—up came the planks, and the horses had "the ground." Earth was thrown in and packed hard, it was a beautiful floor—to look at. In use, however, the horse's stall became an abominable *mess.* I use the word advisedly. I could not then think of another cobble stone pavement, and when cold weather came on, my perplexity came with it. During the summer, farmer fashion, I used to pasture the horses a good deal, and most of the time, day and night, when they were not at work, they were in the pasture, so the bad points of the ground floor were not so obvious as when the horses were constantly stabled. The result was, that the plank floor was relaid, and made more sloping. Now-a-days, the horses are kept up all of the time, and standing on the dry floors their feet get surprisingly hard, the farrier's "draw-knife" slips over the soles, hardly scraping off a shaving, and they seem actually harder than the walls of the hoof. I did not realize the difficulty until my best horse suddenly became lame, and I found that the trouble arose from the fact that the soles had become so tough and hard that the farrier could hardly make an impression upon them, hence the superfluous horn had not been properly "cleaned out" for several months, and the shoes had been simply reset. Packing the feet with moist material, which amounts to a poultice, has been a great relief.

Cement and Cobble Stone Floors.

This has set me thinking about floors. The best stable that I know of has a cement floor, sloping to the rear, with grooves to conduct liquids to a gutter and a "bell" trap. Upon this is a floor of 3-inch strips, cut so as to lie level from front to rear, and laid half an inch apart. This is very nice, easy for the horses either to lie or stand upon—easily cleaned and kept clean, but dry, dry, dry, which I would be afraid of, even if the cost were not a barrier. This packing of the feet is a nuisance; trotting-horse men and gentlemen who keep a coachman and two or three grooms to wait upon him and two pairs of horses, may indulge in the luxury of fancy floors, and packed feet, bandaged legs and all the artificialities of a well regulated stable for their horses, but I can not. I incline, however, strongly to the old cobble-stone pavement again. The front, where the horses fore feet stand, should be "of the earth, earthy," the pavement beginning just back of the stamping place. The stones should be of nearly uniform size, rounded and flat, and set edgeways—there being a slight depression through the centre to carry off liquids—and the floor should, of course, terminate in a gutter behind. I think that a pail of water and a birch broom, used every two or three days, will keep such a floor sweet and clean in all seasons.

Imported Cement for Floors.

I have just learned about floors laid in Portland cement, for use in stables. The cement used is all imported, American cement will not stand. The horses tread directly upon the floor, which is as hard as stone, and is barely affected at all by their calks. Such a floor can be laid for about $3 a square yard, or say $10 a stall. This seems expensive, but it is said to be very durable, and cool and pleasant to the horses' feet. At no increase of expense, a deep basin might be made in the cement where the front feet stand, which, if filled with clay, or loam kept moist, would give the horses all the advantage of "the ground" and of a cement floor combined.

Cement Humbugs.

There is a vast deal of patent humbug about the cement pavements, and imitations of stone, which have come so much into use of late years. "Rights" are sold to farmers, and to people in rural villages, which are utterly valueless. The fact is, any one who can do so, may use and lay the cement walks, cellar floors, etc.; but it must be considered that it requires real skill, and not a little knowledge of the materials, to do the work so that it will last.

For Dairy Floors

nothing I know of is equal to this. I had learned to distrust cement floors, after seeing them not only undermined by rats, but apparently no barrier to them, for rats go through floors grouted and laid in American cement in the usual fashion, wherever they please. But where floors are properly laid, with the best imported cement, it is absolutely impossible for them to go through. The floor is as hard and solid as if of blue stone, and vastly pleasanter and more cleanly.

Different Kinds of Millet.

Considerable interest has been recently taken in "Millets" of various kinds as forage crops. Some new varieties have been introduced; and such seasons as the last at the East, and that of 1875 at the West, set farmers on the look-out for something to supplement the hay crop when it is a short one. Indian corn and turnips are the stand-bys, for this purpose, but the former needs good soil, as well as much manure, and though turnips produce much food, yet it is not of the nature of hay and cannot be substituted for it. Millet of all the ordinary kinds needs dry soil, in good tilth, but not necessarily rich. A very light top-dressing of fine manure, harrowed in with the seed, suffices to ensure a crop in most seasons. Last summer I sowed five different kinds of millet, namely: Common Millet (*Panicum miliaceum*), "Italian Millet" (*Setaria Italica*), "Hungarian Grass" (a variety of the same botanical species, but usually called *Setaria Germanica*), "German Millet," and "Golden Millet," which proved to be the same species, and belonging to the genus *Setaria* also. This last, like the others, seems to be afflicted with several aliases. It has been recently introduced into our agriculture, and has taken very well at the West, where it is called "German Millet," a bad name, for it belongs properly to another plant, if to any. The common millet is called German Millet sometimes, as well as English millet, and the botanical name of the Hungarian Grass, if translated, would entitle it to be called "German Millet," so I was glad to find that among some of our best New York seedsmen, the appropriate name "Golden" was given to it. After sowing, the season was so dry that nearly six weeks passed before I could see the rows, for they were sown in drills on a small scale. Then, after one or two light showers, all came up, and for a while grew rapidly. The "Common Millet" was by far earliest, the "Hungarian" next, the "Italian" next, and the "Golden" latest. The first is exceedingly leafy, but with rather coarse and harsh foliage. Cattle and horses are both exceedingly fond of it, and it produces well, tillering abundantly, and when it is sufficiently mature, throwing up a loose head from the top and from every joint. I had never sown it before, and was much pleased with it. The "Hungarian Grass" I have known and valued for years; it makes capital hay, being, when sown thick, much finer and hardly less leafy than the foregoing. The "Italian" is like it, but heavier a[illegible]ter, bearing a much heavier and larger head o[illegible] seed where it grew thin, but when crowded, growing much like the "Hungarian," but with more of stalk and less of foliage.

The Golden Millet

I liked very much; though it did not mature well, as in fact, neither did the others—they were all kept back so by the dry season—but it showed its good qualities by yielding an excellent crop of forage. The stalks were abundantly clothed with rather coarse, harsh, broad leaves, and the whole plant was sweet, succulent, and tender, not woody, when cut and dried. I examined two or three fields of millet, probably "Hungarian Grass," in this vicinity, some on upland, as was mine, and other upon low ground. It was all so affected by the drouth that it did not make half a crop. I have never known this to happen before. Millet will generally produce a fair crop under almost any circumstances. The "Golden Millet" stands up well, and I think I shall like it better than "Hungarian" on that account, for I have had the crop of the latter greatly injured by lodging, being beaten down by wind and rain, and getting full of grit from the rain spattering the soil upon the prostrate plants. I am led particularly to think of these experiments with millet, because I am confident we will be, at least in my vicinity, short of hay next year, as all the grass seed sowed last year failed, though it started well and looked promisingly enough in May, every spear over whole acres was burned out before August. Our plan is to give the land two plowings, and a light dressing of manure, and to sow millet, seeding down at the same time, as early as as the first of June, though this is a month earlier than is usually recommended. If we do not let the millet mature seed, it will not exhaust the land, and I am by no means sure it is not a more profitable crop to seed down with than oats.

Making Butter in Winter.

We had two cows come in, one in November, the other in December, last year, and so have been making butter all winter, which is unusual with us. We have milked Jersey cows, usually, with one or two grade Jerseys, or perhaps a common cow, and our system has been to have them go dry one after the other during the winter, giving us just about as much milk as we needed for home use, and to supply a neighbor or two while their cows were dry. This makes work lighter, both in the stable and in the house, and where farmer folks do their own work, this is of course a point worth considering. I have taken such a fancy to Guernsey cows that, as my Jerseys were not registered, I bred them to a Guernsey bull, and the two heifers which have been fresh this winter, are a Guernsey and Jersey cross. They have been fed hay and corn-stalks—nothing else until quite recently, when they have had a little bran daily. The butter has come solid and well every time, of a fair yellow color, by far better colored than ever before, and with none of the usual cheesy, crumbly characteristics of winter butter, except that it has not the flavor of mountain pastures and Sweet-scented Vernal-grass. The good texture and ease of churning, and general good quality of the butter, may no doubt be accounted for by the fact that two of the three cows milked were fresh, but the color, I think, is due to the Guernsey blood. There is no need of coloring this butter for people who know anything about butter and about cows. It is a delicate tint, positive enough, and yet nothing like grass butter from ordinary Jersey cows, though it has just about the color of much summer butter from common cows. My neighbor, Wood, has long made the claim for his Guernseys, that they carried the color of their butter the winter through, but I attributed it to his carrots and mangels, and to the extra green-cut hay, and to the liberal feeding of corn-meal, but now I am convinced that it is the Guernsey blood.

Lawn Clippings for Coloring Butter.

Among all the varieties of fodder tried to keep up in cows the ability to produce yellow butter throughout the winter, I know of none equal to this, and yet I do not know that it has been thoroughly tried. A single case of marked effect fell under my observation. Late in January, after the Jerseys of a friend of mine had paled down, as to their butter after the usual fashion, in feeding, a layer of hay made from lawn clippings was reached in the hay mow, which for a week or more constituted an essential proportion of their food. That week the butter brightened up in color to a very noticeable degree, and on investigation, the above facts were developed. It is an experiment that is well worth thoroughly testing at any rate.

Talks on Farm Crops.—No. 2.

By the Author of " Walks and Talks on the Farm," "Harris on the Pig," etc.

"Shall we sow barley or oats," asked the Deacon, "or shall we give up both and plant corn?"

"One would suppose," said the Doctor, "that an intelligent farmer would have all his plans formed beforehand, and would know what crops he was going to put in, and where."

"True," said I, "but of all men, a farmer must stand ready to change his plans. He will not do it capriciously, or without looking carefully into all the details. But if, after thinking over the matter, he is convinced that it will be better to sow oats instead of barley, or corn rather than either, or beans instead of corn, and if he knows where it is going to land him, let him not hesitate, but make the change promptly and boldly. I presume every farmer, in looking back, can see where it would have been far better to have given up sowing oats or barley, and to have planted corn instead. Such, at least, is my own case. And still further, I am sure that many times it would have been better if I had given up all idea of putting in any crop on certain fields, and simply summer-fallowed them."

"This was before you had drained your land," said the Doctor, "and when a day's rain would set back your field work for a week."

"We have not time to discuss this matter now," said I, "all I can say is, that if I had a piece of land in prime condition, I should rather sow barley than oats. But if the land was cold, cloddy, poor, and weedy, I would rather run my chances with oats than with barley; and if the season was wet, and I was backward with my work, I should be strongly inclined to give up sowing either oats or barley, and put the land into corn. If we did not get much corn, we should be able, by the free use of the cultivator, to clean and mellow the soil, and make it in better condition for barley or oats next spring."

Of all the ordinary grain crops, barley requires the richest and best land. A poor crop is a nuisance. It is difficult to harvest, and worth little when harvested. Good six-rowed barley, last fall, weighing 48 lbs to the bushel, would have sold for $1 per bushel much more readily than poor barley, weighing 44 lbs. to the bushel, would have sold for 70 cents per bushel. I have had a crop of barley of 12 bushels per acre, and I have had a crop averaging over 50 bushels per acre. Of course, in the former case, I was inclined to throw the blame on the "season," and in the latter to take the credit to myself. But, in fact, the difference in the two crops was largely due to the condition of the land, the preparation of the soil, and the time of sowing.

Last year my whole crop of barley averaged 39 bushels and 10 lbs. to the acre. I do not think the whole crop of the neighborhood averaged 15 bushels per acre.

The Deacon looked as though he thought I was in a boastful mood. But in truth I am far from entertaining any such feeling. These are not times calculated to foster a self-satisfied spirit. But it is very evident to my mind, that the only way to make money by farming is, to adopt a better system of agriculture. We must make our land cleaner, and we must keep better stock, feed higher, and make richer manure. We shall then grow better barley, and, taking one year with another, find the crop a decidedly profitable one.

In regard to whether it is better to sow oats or barley, much depends on climate and soil. In sections where oats do well, and barley usually fails, it would be unwise to sow barley. But in those sections where the climate is alike favorable for barley or oats, and where it is a question of soil and preparation, it may be observed:

1st. That oats sometimes do well on an old sod, but barley rarely, if ever, does so.—2nd. Oats ripen later than barley, and while it is very desirable to sow oats as early as the land can be got into good condition, still you stand a better chance of a crop from late sown oats, than from late sown barley.—3d. Oats will do far better on low, mucky land, than barley. If such land is well drained and is in good heart, and in a fine mellow condition—as after a well cultivated corn, potato, or root crop—a great crop of barley may sometimes be grown, especially if the land has been limed, but the chances are altogether more favorable for a great crop of oats.—4th. On low, mucky land, that is only partially drained, and which cannot be worked early in the season, it would be folly to sow barley. If sown at all, I would drill in oats, if the land was dry enough to admit the use of the drill; or if not, sow the oats broadcast, and if they could not be harrowed in, let them sprout on the surface, and roll the land when it is firm enough to hold up the horses. It would be better, however, to summer-fallow such land, working it thoroughly, and make it clean and mellow, and then seed it down heavily with timothy, (and perhaps red-top), next August. At any rate, do not sow barley.—5th. Oats will do better on heavy clay land, than barley. This is the rule. The exceptions are rare. The heaviest crop of barley I ever saw, was on a field of heavy clay land that was summer-fallowed the year previous for wheat, by three plowings, and then not sown to wheat in the fall, but plowed again in the spring, early, and sown to barley. Everything was favorable, and the crop was immense.—6th. On weedy land it is better to sow oats than barley. Drill in the oats deep, and use a plenty of seed. Roll the land either at the time of sowing, or after the oats are up. Then, when the weeds are sprouted, and are in the seed-leaf, go over the field once or twice, or three times, if necessary, with a light, fine-toothed harrow, such as the Thomas smoothing harrow, for the purpose of killing the young weed-plants. Oats can be harrowed with less injury to the plants than barley. And if the soil and weather are favorable, and the operation is performed at the right moment, thousands of weeds will be destroyed, and the stirring of the ground will be favorable to the growth of the oats.

"Would you sow two-rowed barley or six-rowed?" asked the Doctor.

If for my own use I would sow the two-rowed; if for sale, the six-rowed, for the reason that the latter is in greatest demand, and brings 10 cents a bushel more than the two-rowed.

The two-rowed is later than the six-rowed; it does not germinate so quickly as that, and should be sown earlier. The straw is longer and stronger, and the grain considerably heavier than the six-rowed, and it is more nutritious.

But so long as the six-rowed commands the most money, it is the most profitable kind to grow.

"It is strange," said the Doctor, "that the poorest barley should bring the best price. Usually poor things are easier produced than good ones."

"True," said I, "and this barley case is only an apparent and not a real exception. Six-rowed barley is preferred because it malts quicker; but the brewers are very anxious to get the very best six-rowed barley they can find. And it is not difficult to understand why it is easier to raise an average sample of the better (two-rowed) variety, than to produce an extra sample of the inferior (six-rowed) variety. But we have not time to dwell on this point. On good soils, and in a favorable climate, at present relative prices, it is more profitable to raise six-rowed than two-rowed barley, *provided* we succeed in raising and harvesting a superior sample.

I have said six-rowed barley can be sown later than two-rowed; but it is nevertheless important to get in the seed as early as the soil can be properly prepared. Some good farmers plow their corn-stubble in the fall, and drill in the barley in spring, without plowing. The English farmers prefer to sow on a "stale furrow;" but this does not mean fall-plowed land. They plow the land early in spring, and let it lie a few weeks before sowing. Sometimes we can do the same thing here. We can plow as soon as five or six inches of the surface soil is thawed out, but while the soil underneath is frozen. Let this lie exposed for a week or two, until the surface soil is dry and warm, and then harrow thoroughly and drill in the seed.

I usually sow 2½ bushels of seed per acre If the land is in good condition, 2 bushels is a plenty. I once accidently sowed barley with a drill set for sowing wheat, and used the wheel for sowing 2½ bushels of barley, and of course only put on 1¼ bushels. I did not discover the mistake until after the barley came up, when it was too late to put on more seed. The land was in prime condition, and the crop averaged, if my memory serves me, 51½ bushels per acre. At any rate it was a noble crop.

A bushel or two of gypsum, per acre, is sometimes sown on the barley with decided advantage. Last spring I sowed a field with barley, in which were some poor sandy knolls. On these we put on a light dressing of barnyard manure—and there we had decidedly the best barley in the field.

"Yes," said the Deacon, "I think, where you manured, you had 50 bushels to the acre."

It is usually thought that barley, in this country, does far better on rather heavy loam than on a sandy loam, and this is usually the case—simply, as I think, because the heavier soil, when well worked, is richer than the sandy soil. But make the sandy soil rich enough, and I am inclined to think you will get a good crop. And on such a soil you can get it in earlier than on the heavier land.

Farmers who sow barley on light dry land, would probably find it to their advantage to sow 150 lbs. of nitrate of soda and 150 lbs. of superphosphate to the acre, or 250 lbs. of prepared Peruvian guano guaranteed to contain ten per cent of ammonia.

"Are these manures equally good for oats?" asked the Doctor.—Yes, and will pay just as well, and possibly a little better, provided the oats and oat-straw are worth as much per 100 lbs. as barley and barley-straw. When you can get from 1½ to 2 cents per lb. for oats, and when the straw is wanted, these manures can be used on oats to decided advantage.

I want to make one remark about using artificial manures. You will waste your money if you sow them on land not in good mechanical condition. If your land is wet and cold, or cloddy, or weedy, you need not go the chemist. You had better go to work. Put your land in good condition for the seed, and manures will help you, but not until then.

Of late years, I seldom sow oats alone. I think oats and peas sown together pay better. I have had some grand crops. If cut before the peas are dead ripe, and the crop is got in without exposure to rain, the straw is nearly as valuable as clover hay—especially if you do not thrash very clean!

"I do not see what there is to be gained," said the Doctor, "by sowing two crops on the same land. Last year you sowed wheat and rye together. You had a good crop of rye, but the wheat was nowhere. Farmers tell me that by sowing oats and barley together, they get a larger yield per acre than from either alone. But I do not see why."

"I believe it, nevertheless," said the Deacon.

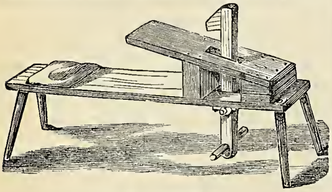
"In the case of oats and peas," said I, "you must recollect that they have very different habits of growth. It seems to be proved that oats, barley, and wheat require a liberal supply of nitrogen in the surface soil, while clover, peas, and beans, take their nitrogen from a lower layer of soil. And if this is the case, there may be good reason to expect a larger crop of oats and peas sown together, than for either sown alone. They have two fields to feed on instead of one."

The main point is, to be sure that the soil is in good condition. It is very desirable to get the crop in early. I have had the best success on stubble land; say after corn, well manured and plowed in the fall; or after wheat, where the clover sown with the wheat failed. In the latter case I manured the land for the oats and peas, and had an enormous growth. The peas, I suppose, got the plant-food from the lower layer of soil, which the clover would have had if it had not been killed by the drouth.

I may mention that I have bad very "bad luck" with clover for several years. I have this year a very promising catch on rye stubble. But the field has not been sown to oats and peas. And it has occurred to me that oats and *peas* are not as good a crop to precede wheat, seeded with clover, as oats and barley alone would be. The peas may remove from the soil the food required for the clover. I would like to know if the pea-growers in the northern counties of this State, Canada, Wisconsin, and Minnesota, or elsewhere, have observed any facts bearing on this point. If it is true of peas, it would most likely be true of beans.

A Shaving-Horse.

In reply to several inquiries for a shaving-horse, or a machine for holding shingles, or other articles that require to be worked with the drawing-knife,

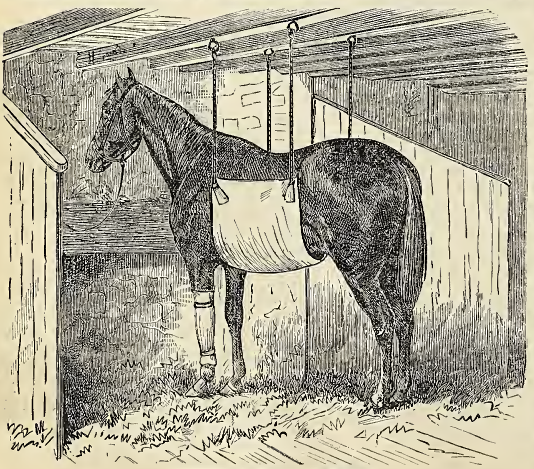


A SHAVING-HORSE.

we give the accompanying engraving of one in common use. It consists of a strong stool, made of hard wood plank, four feet long and a foot wide, with four legs, which are eighteen inches long. Upon one end of the stool is fixed a bench, nearly two feet long, sloping a little from the front backwards, to make it more convenient in use. This bench may be supported upon four posts, or two walls of plank, being then open underneath at each end. A slot is cut in the bench, to admit the end of a lever, which is pivoted in a similar slot in the plank beneath. A stout peg, similar in shape to a rung of a ladder, is fixed in the bottom of the lever, and projects about six inches on each side. The lever is sawed out of a piece of tough white-oak plank, and a carriage bolt is passed through the jaw, at the upper part, in order to strengthen it. When in use, the workman bestrides the stool, using a cushion if desired, setting with the bench in front of him, and his feet upon the peg beneath it. By pushing with the feet, the jaw of the lever is pressed down very firmly upon whatever work may be placed upon the bench. The slope at which the bench is placed, should be such that the drawing motion will be as easy as possible to the workman.

How to Sling a Horse.

There are occasions when it is desirable, if not necessary, to prevent a horse from lying down and yet to give him an opportunity to rest. This can only be done by the use of slings. These may be made by procuring three widths of sail or tent cloth, from 4½ to 5½ feet long, to suit the size of the horse, and sewing them together by the edges with strong twine so as to form a sheet. The ends are turned over pieces of rope, one inch in diameter, and sewn very strongly. Each rope has a strong ring at one end, and the other is left long enough to tie as may be needed, and as will be described. Two hook-bolts are passed through the beams overhead, on one side of the stable, about six feet apart, and two ring-bolts upon the other side, over the horse, and are fastened into the floor above with washers and nuts. When in use the sheet is passed around the horse under the belly, the rings of the sling are put on to the hooks, and the ropes are drawn through the bolt rings, and adjusted so that the sheet is just free from the horse when he stands, but will hold firm if he attempts to lie down; the ropes are then securely fastened so that they will not stretch. It is well to use old ropes for this purpose, that will not give when a strain comes upon them. The sling is useful in case of injury to the feet or legs of a horse; a broken leg may be set and repaired, if properly bandaged, and the horse is thus supported; the loss of a hoof may be repaired, and it is useful when severe flesh wounds are to be treated. By raising the ends of the sling-ropes, with levers on the floor above, a horse may be lifted entirely off of his legs, and suspended there. There are cases also in which the sling may be used to raise or suspend cows or oxen. In the latter case part of the sheet beneath the belly should be cut away for obvious reasons.



MANNER OF SLINGING A HORSE.

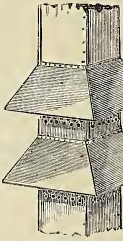
Plowing Sod for Corn—Good and Bad Treatment.

There is no better fertilizer for corn, nor any that is more congenial to its habits of feeding, than a clover sod that is freshly turned while in a vigorously growing condition. If this is lightly plowed, so that there is only sufficient mellow soil above the inverted sod to form a bed for the seed, the young rootlets find agreeable and nourishing food from their first pushing forth from the germ. Then the growth of the young plant is vigorous from the start, and rapidly advances beyond the reach of its living enemies, and also the dangers of unfavorable weather. But let us suppose that a sod, however good it may have been, has been plowed under deeply—as is frequently recommended by those who can not have had experience in growing corn. In this case we should have the natural food of the plant buried at a depth of perhaps four to six inches below the seed, and the seed enveloped in a bed of poor soil, containing no proper nutriment for a young plant. Then the rootlets, finding a dearth of food, will grow but very slowly, the plant is stunted and weak, and needs a long time to reach a point when it will be safe against cut-worms, cold rains, or drying winds. In this poor condition the plant lingers along, with an abundance of food *just out of its reach*. The consequence will be apparent to every farmer. It may certainly be avoided by using some good stimulating fertilizer, such as Peruvian guano, Manhattan blood guano, or any of the well compounded chemical fertilizers that are specially prepared for this crop, but even then the proper effects of these fertilizers are in a measure thrown away, because they are used to fill up a gap that has been made simply by mismanagement. Otherwise they would have greatly helped the crop, but now they merely save it.

Just now farmers should be helping along their clover sods in preparation for turning under, and a moderate dressing of any of the above named fertilizers, or of well saved poultry-house manure, used as soon as the growth starts, will push forward the clover, so that when it is turned down there may be a luxuriant growth, and the soil may be well furnished with plant-food besides. For it must be remembered that the fertilizer will not have been used up by the clover, but will be mainly in solution in the soil, ready to start the corn.

Ventilator for a Cess-Pool.

A correspondent from Dodge Co., Neb., sends a sketch and description of a ventilator for a cess-pool. It consists of a square wooden pipe, sufficiently high to catch the wind and reaching down into the vault. To cause a draft upwards through the pipe, caps of tin, sheet iron, or wood, are placed as shown in the engraving, beneath which there are several holes through which the draft passes into the pipe. The draft starts and keeps up a current of air, which carries off the noxious gases from the vault.



VENTILATOR.

Corn-Marker for Uneven Ground.—A Home-Made Harrow.

"A. H. B." sends from Stark Co., Ohio, drawings of a corn-marker and a harrow, which he has made for his own use. The corn-marker, figure 1,

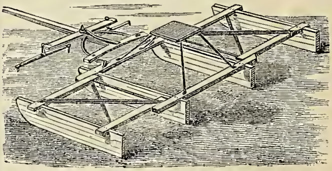


Fig. 1.—FLEXIBLE CORN-MARKER.

is so constructed that it will accommodate itself to uneven ground. It consists of two pieces of plank, 2x8x3½; these form the middle set of runners. Upon these is pinned two pieces of 2x4 scantling, with each end projecting over the runner 6 inches; through these ends are bored holes for a ⅜-inch rod. Two other pieces of plank, like the former, are procured, and one end of two other pieces of scantling are pinned to each runner; then these

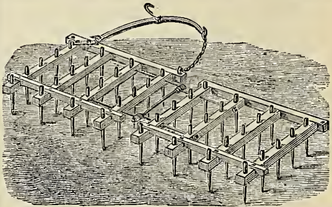


Fig. 2.—AN EXCELLENT HARROW.

beams are connected to the middle pair by the bolts, as seen in the engraving, so that, while one runner is on high ground, the other may be in the land furrow. In turning around, the two outside runners may be turned up against the seat.

The harrow (fig. 2) is a square one. The teeth are set twelve inches from center to center, each way. There are four beams in each half, and five teeth in each beam. These beams are 4 ft. 8 inches long, mortised into the front piece, which is 3 ft. 7 inches in length. The rear ends of the beams are secured by a piece of timber, 2x1½ inches, halved on to the beams and then bolted. The harrow is made of 2½x2½-inch scantling, using locust wood, because of its great durability and firmness. There is nothing particularly new about this harrow, except that it is larger than common, and the novel way of hitching to it by which it is kept steady, and the teeth can be made to cut six inches or one inch apart. The manner of hitching is shown in the engraving. The draw-bar is made of ⅜x1¾ iron, 3 ft. 4 inches in length. The chain is attached to this by a hook at one end, the other being fastened to the harrow by a staple. The chain is two feet long. The entire cost, I think, is about $12.00. Our farmers here think it to be the best harrow they have ever seen.

◆

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.,

Self-closing Doors.—A self-opening, rolling door is shown at figure 1. A half-inch rope, attached to a staple driven into the upper edge of the door, passes parallel with the track, and beyond the boundary of the door when open, over a small grooved pulley and thence downward; a weight is attached to its end. The door is shown closed, and the weight drawn up. As the door is a self-fastening one, when the fastening is disengaged, the weight will draw the door open. By a string or wire connected to the fastening, the door may be opened while standing at any part of the building, or if one end be attached to a post outside, near the carriage way, the door may be opened without leaving the vehicle, a desirable plan, especially during inclement weather. The weight and pulleys should be located inside the building, but are shown outside to make the plan more readily understood. By attaching the rope to the opposite side of the door, it may be made self-closing instead of self-opening, as thought most convenient. The manner of closing a swing-door as in fig. 2, is so clearly shown, as to need no description.

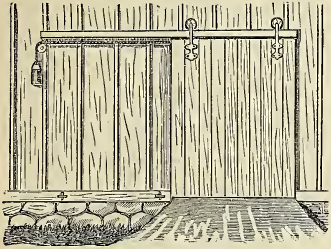


Fig. 1.—SELF-CLOSING SLIDING DOOR.

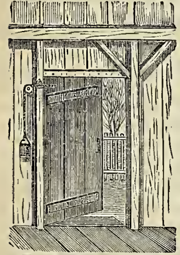


Fig. 2.—SWING-DOOR.

Sheep-racks and Feed-troughs.—The combined hay-rack and feed-trough for sheep and cattle, shown in figure 4, is a strong and convenient arrangement, especially in small yards. The frame should be made of 2x3 inch stuff, excepting the posts, which should be 4x4, and made about 12 feet in length. The hight and width will depend on whether the large or small breed of sheep are kept. The troughs are upon either side, and are made from four boards nailed in a V form, forming a center ridge, to which the lower end of the laths are nailed, as shown. If desired, grain can be fed in the troughs, but if hay, with weeds in it, or cornstalks be fed in the rack, the trough should be cleaned at each feeding. This is a heavy rack, and on account of its many parts should be sheltered. A much cheaper, but a stationary rack, is shown in figure 5—it is located under a shed or in a basement. Pieces 3x4 in. and 3 ft. in length are nailed to the upper and outer edge of the sill, the top projects outward about ten inches, and is connected with the boards in front. The boards are nailed on, and should reach downwards to within about 5 inches of the sill; by this plan no chaff or seed gets into the wool. The plan of figure 4 may be changed by using boards similar to those seen in figure 5, instead of the slats, and yet retain the feed-trough. If a cover, similar to that shown in figure 3, be provided, it would keep out all snow, dirt, or refuse matter. One board, of sufficient width to completely cover the top of the trough, is hinged to one side. In the figure this is shown partly open, the legs are beveled at the top for the purpose of allowing the cover to hang down, if desired.

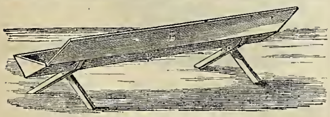


Fig. 3.—RACK UNDER A SHED.

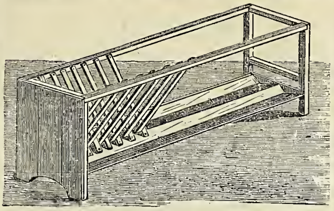


Fig. 4.—HAY AND GRAIN RACK.

Churning by Water-power.—Many a dairy-farm has its never-failing stream of water, which passes close to the milk-room, and is often of such size that by a small outlay the water may be made to do the churning. A small stream might have a dam a few feet in hight, twenty or sometimes a hundred feet above where the wheel is to be located. The water may be conducted to the wheel by a wooden trough or iron pipe, the upper end located near the bottom of the dam, so that nearly or quite all the water may be used if necessary.

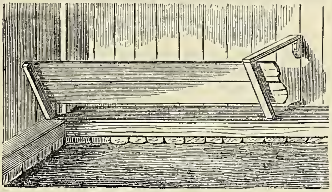


Fig. 5.—COVERED RACK.

Figure 6 will give an idea of the general arrangement of a wheel, and the gearing, connecting-rods, etc., needed. When a small wheel and a good stream of water are used, the crank to which the pitman is attached may be secured directly to the shaft. If a large wheel be used, gearing will be needed to increase the rapidity of the movement; or should a small wheel move too fast, or too slow, it is regulated by cog-wheels. In figure 7 is shown a plan of gearing to the churn. The shaft is four inches square, and the ends work in hangers, attached to the wall overhead; short arms are attached, each about one foot in length, and to these are secured the ends of the transmitting wires. The arm by which the dashers of the churn are worked is from 4 to 6 feet in length. The churn-dash is attached by a small wooden or iron pin. Frequently the water-wheel is located ten or twenty rods from the churning-room, the wires are then kept apart by short sticks working on a pivot attached to poles set in the ground ten rods apart.

Yield of Crops and Profit Compared.

The Greatest Profit Not in the Greatest Roots.

To grow large crops is generally the aim of the ambitious farmer. But it is often a matter of disappointment to such a farmer to see the value of his large crops eaten up by the money paid for labor, and bills for fertilizers, while his neighbor, whose crops yield but half what he produces, saves money and in time becomes rich. There is a point where the profitable yield of the soil ends, and beyond which the profit decreases as the yield is increased. This point depends chiefly upon the natural condition and character of the soil. A naturally poor soil may be stimulated by generous manuring to produce as large a crop as a naturally good soil would yield without the manuring. It is evident to the most careless farmer, that in the former case there would be a loss in growing such a crop as compared with the latter. To know the capacity of his soil is, therefore, the most important business of the farmer. A very interesting case in point is recently given in a French agricultural journal. A large grower of beets had experimented with a view to find how he could grow the most profitable crops; his aim being profit, and not beets for themselves alone. He therefore planted five parcels of ground, and cultivated them all differently. One plot was not manured at all; the others were fertilized at a cost of from $65 up to $104 the plot of about 2½ acres. The crop on the unmanured plot was about 27 tons to the plot, while the yield upon the others was from 39 to 58 tons. But the value of the roots was in almost exact ratio with the smallest crop. Thus, the 27 tons contained 14.92 per cent of sugar, and only 1.90 per cent of ash, with a density of 7.1 per cent. The value of these roots at the sugar factory was $6½ the ton. The net value of the crop was $178. The crop of 58 tons, contained only 10.30 per cent of sugar, but the excessive quantity of 6.80 per cent of ash, with a density of only 5.4 per cent. The value of the roots at the factory was only $3.92 per ton. The net value of the crop was $134; the extra labor of harvesting a larger crop was not included in this amount, only the cost of fertilizers being deducted from the whole value of the beets. This

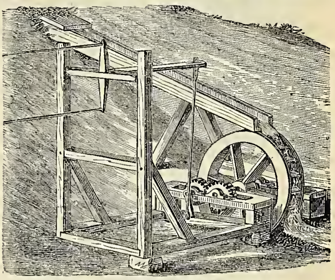


Fig. 6.—WATER-POWER FOR CHURN.

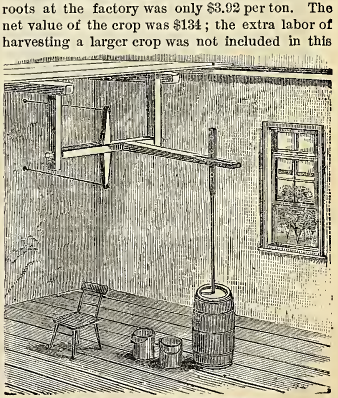


Fig. 7.—GEARING FOR CHURN.

is a direct proof of what we have frequently pointed out, but which does not seem to have satisfied some of our critical readers, viz., that large roots are of inferior value to small but well grown ones, and that if the soil be stimulated to produce excessively large crops, there *may be* danger of loss instead of profit. As in many other things, so in growing farm crops, the course of wisdom generally lies between extremes on either side.

A Fence of Timber and Wire.

It may be that there are no fences which are perfectly satisfactory as regards cost, durability and usefulness. The number of new designs for fences that are offered, and the number of inquiries show an evident want of a fence that will meet the needs of the largest number of people. A fence free from all objections has not yet come into use. The use of wire for fences, in places were timber is scarce and costly, has become popular, and seems to be economical and effective, but there are objections to it; the principal being, that the wire is not seen by animals, which are liable to come into violent contact with it to their often serious injury. Besides this, the contracting of the wires in cold weather draws the posts out of place, and soon makes the fence worthless. These are important faults in the wire fence, to overcome which many devices have been proposed, a number of which have been from time to time published in the *American Agriculturist*. A device which surpasses in value any that we have previously seen, is illustrated in the accompanying engravings. It consists of a combination of the ordinary wire fence with wooden rails. The rails are grooved, as shown in figure 1, and the wire passes through the groove. When the rails are fitted into the posts, the wires are out of sight, and to all appearances the fence seems to be one of plain posts and rails, as shown at figure 3, which represents a five-rail fence. When it is not necessary to use so many rails, a three-rail fence may be used, as that in figure 4, which is very appropriate for a road fence. Other forms of the fence are shown at figures 5 and 6, in which only enough of the wires are covered, to make the fence sufficiently conspicuous to the animals confined within it, to avoid danger. The wires are tightened by means of the roller shown at figure 2, furnished with a sort of ratchet, by which it is held in its place when tightened. From the form of the fence it is readily seen that no braces or straining posts are needed. When the wires are drawn tight, the whole becomes rigid, and there is no strain whatever upon the posts. The whole strain is exerted upon the rails, which cannot spring, because they are held by the wires, which give abundant support and strength to the rails. The fence is made by the American Fence Company, of 100 E. 14th St., New York. Southern cypress is used for the posts, and Georgia pine for the rails; these materials being selected for their durability. It is one of the cheapest forms in use, and one that meets the wants of many correspondents who have inquired for such a fence.

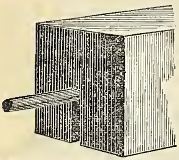


Fig. 1.—RAIL AND WIRE.

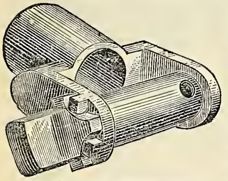


Fig. 2.—WIRE TIGHTENER.

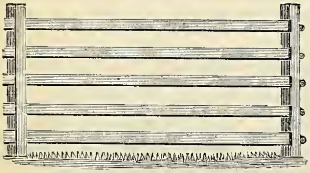


Fig. 3.—A FIVE-RAIL FENCE.

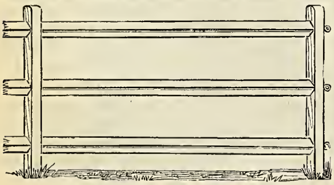


Fig. 4.—A THREE-RAIL FENCE.

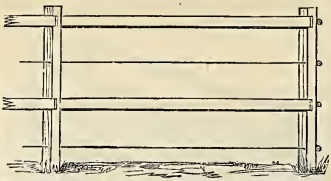


Fig. 5.—FENCE WITH TWO RAILS AND TWO WIRES.

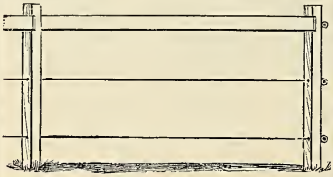


Fig. 6.—WIRE FENCE WITH TOP-RAIL.

Some Useful Implements.—Seed Planters—A New Plow.

Corn planting by hand, in the old-fashioned method, should be entirely abandoned. The slow manner of marking out cross-furrows, dropping seed at the corners, and covering with the hoe, by which six or seven people can plant one acre a day, is not profitable in these times, when the greatest economy and skillfulness of labor is necessary. An engraving, (figure 1), is here given, of a corn or other seed planter, which is not nearly so well known, or so extensively used, as it deserves to be. We have used this implement for several years, and have planted 8 acres of corn in a day, while a neighboring farmer and his whole family have been kept busy in planting less than one acre. It is known as the

"Emery Corn and Seed Planter,"

and is made by the Emery Manufacturing Company, of Albany, N. Y., whose agents in New York are R. H. Allen & Co. It is drawn by one horse, and by first running a row as straight as possible by the fence, and afterwards keeping the eye on the last row made, the rows may be made as regular as they could be marked out by a good plowman. If there are any crooks in the lines they are not sharp, and the cultivator can easily be run between the rows. Our plan is to make the rows three feet apart; dropping three grains every two feet. This gives exactly one half more hills per acre than by dropping 3 feet apart each way, as there are in a square acre 70 rows one way, and 105 the other, instead of 70 rows each way at 3 feet apart. This we find gives ample room for the common 8-rowed corn grown in the Eastern States, but for the larger corn of the West, 4 feet rows, and 3 feet apart in the rows, would be preferable. We do not recommend this implement for use at the West, as there are several kinds of corn planters which drop two rows at once, which are better on the mellow prairie soils; but for use on eastern farms, where corn, peas, beans, carrots, turnips, and beets are all to be sown, this will be found very useful. The seed is dropped by means of a revolving block, shown at *b*. Several depressions, or cups, are made in this block, which, by screwing down broad screws, the cups may be made large enough to hold two, three, five, six or more seeds, as may be wanted. There are a number of these cups in the block, and by using all of them the seed may be dropped 3 to 6 inches apart, or by using some, seed may be dropped 2 to 3 feet apart, and it may be regulated for any intermediate distances. When small seeds are to be sown, the block is removed, and perforated slides, of different sizes for different seeds, are inserted—while a revolving brush, seen at *a*, is put in place of the revolving block. The seed is then dropped in a continuous drill, which is covered and rolled at one operation. The machine will work very well in stony land, provided the stones are not too large to be pushed out of the way by the little plow which makes the furrow. In planting sod ground that has not been well plowed, care must be taken not to permit loose sods to be dragged beneath the seed spout, else the seed will not be properly placed, being dragged along on the sod, and left in a bunch when the sod becomes loose. As the whole operation can be seen, there is no danger of anything going wrong, if ordinary care is used. To get the machine into proper working, it should be tried on the barn floor, or upon a smooth yard, when the dropping may be regulated to a nicety.

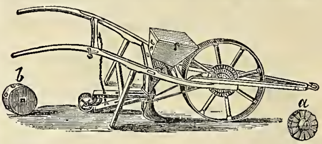


Fig. 1.—EMERY CORN-PLANTER.

One of the great benefits of using machinery upon the farm, is the necessity that at once arises for clean culture, for neatness and thoroughness of every operation, and for keeping the land free from every obstruction and in a mellow condition. This alone is a sufficient advantage to compensate for the cost of the machines, and will pay for them every season they are used if these advantages are made the most of. Then the saving of time, labor, and seed, and the increased yield of crops are a clear gain.

For sowing field crops by hand the smaller machine, shown at figure 2, may be used. This is

The "Planet Drill,"

made by S. L. Allen & Co., of Philadelphia. This requires no horse, being pushed by hand along the row. It is obvious that this, or any other hand machines, can only be used to advantage, in field culture, when the soil is kept well worked, fine and mellow, as they are chiefly intended for use in the market gardens, or the farm garden. But a machine of this kind may be made to serve a very good purpose, in sowing seeds of root, corn or other crops where the area is too small to make it profitable to use a horse machine. This machine may be used for distributing concentrated fertilizers in the drill, and it is so constructed that it can be readily converted into a hand cultivator or wheel hoe. The testimony of the editors and others who have used this implement, induced the publishers

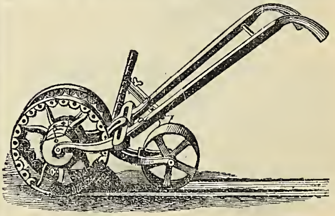


Fig. 2.—ALLEN'S "PLANET" SEED-DRILL.

of the *American Agriculturist* to place it on their premium list, thus enabling farmers and others to procure it without an outlay of ready money.

At figures 3, and 4, we illustrate a new plow which offers some special advantages. When exhibited at the fair of the American Institute, last season, it attracted much notice, and the prize of a silver medal was awarded to it. It is known as

The "Adamant Plow,"

made by the New York Plow Co., of Beekman St., New York. Its title of "Adamant" comes from the material of the mold-board and share, which are of a metal so hard, that a fragment of it will scratch glass, is not subject to any appreciable wear, will resist rusting, and it takes a very high polish. From the use of this metal are gained the advantages of great strength, which secures it against breaking; great durability from absence of wear; ease of draft, from the highly polished surface, and this also gives it perfect freedom from clogging in any soil. From the start the plow clears perfectly. The ease of draft is also increased by the peculiar form of the plow, which is shown at figure 4, and by which a truly central draft is secured. The draft is from the center, and the point of attachment being movable, the central draft can always be kept perfect by adjusting the attachment. This may be done while the plow is working in the furrow. The shape of the land-side, shown in the engraving, makes it evident that there is no pressure on the land-side of the furrow. When in use, this plow glides through the soil with great ease, and with such steadiness that when properly adjusted a child might hold it. A small size, for one horse, and for use in cultivating, or on fruit or market farms, is made as well as the two-horse plow which is the pattern here shown.

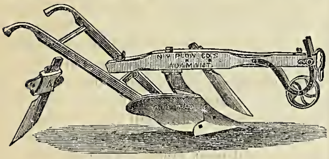


Fig. 3.—ADAMANT PLOW.

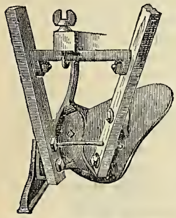
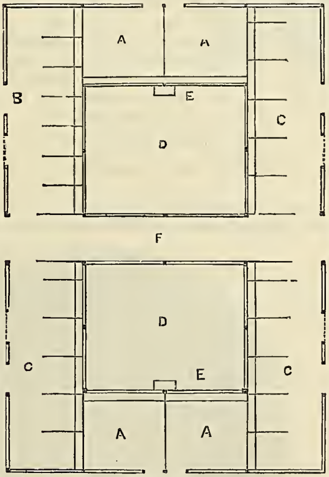


Fig. 4.—FORM OF PLOW.

Prize Farm Management.

We may often learn much from observing what our neighbors are doing. No one head holds all the wisdom of the world, and there is no one who may not sometimes learn from others. Where every man is experimenting and trying new ways and things, some will be sure to hit upon improvements, and this is especially the case in agriculture of all kinds. In no other business is it more necessary to know what other people are doing than in this. Hence it is sometimes useful even to look abroad into other countries, and observe the ways of farmers there. We have recently read a report upon an English prize farm, in the "Journal of the Royal Agricultural Society," which is very interesting. The farm consists of 333 acres of arable land, and 150 acres of permanent pasture, which is never plowed. The method of cultivation, which is as follows, is very instructive and suggestive. The rotation is a six-year one, viz.: roots, barley, clover and grass, wheat on the sod, beans or peas, wheat or barley. Mangels are drilled in, 22 inches apart, 8 pounds of seed is used per acre; 200 pounds of nitrate of soda is sown upon them, immediately after they have been singled, and the horse-hoe is used as soon as the nitrate has been sown; the crop averages 47 tons per acre. With barley, 14 pounds of clover and a peck of grass seed, are sown. Fifteen 2-horse loads of manure, per acre, are spread for the wheat. The wheat is always harrowed in the spring. The ground is again manured for peas or beans, (this crop is equivalent to our corn crop), with 12 loads per acre of barn-yard manure; and wheat follows this crop and completes the course. The apportionment of crops last year was: wheat, 93 acres; barley, 40; oats, 19; beans, 31; peas, 14; first year clover, 60, (of which 32 were mown, and 28 grazed); second year clover, grazed, 20; mangels, 12; Swede turnips, 31, and lucern, 8 acres. The effect of so much cultivated cropping was to keep the land perfectly free from weeds, and to furnish a very large amount of fodder for stock. Seventy head of cattle are fed, 140 ewes are kept, and 40 beeves are fattened every year; 180 lambs were raised last year by the 140 ewes; 500 to 600 sheep are bought every year and fed for the butcher, and 9 horses are kept. The horses are purchased when two years old, and worked until they are seven, when they are sold off at a good profit. The quantity of food purchased for feeding, averages per annum 10 tons of linseed-cake, 12 tons of other cake, 5 tons of meal, 320 bushels of oats, 80 bushels maize, and 3,900 bushels of brewer's grains. Of artificial manure only 1,700 lbs. nitrate of soda was purchased last year for the mangels. Nearly $3,000 worth of purchased and home grown food is used each year. The labor employed consists of 15 men, 3 boys, and 6 women. There are nine neat comfortable cottages for laborers upon the farm, each of which has a garden attached. The laborers employed have all been on the farm many years, and have never joined any strike, or exhibited any dissatisfaction, during all the recent popular excitement among the English laborers. The labor bill averages from $4,000 to $4,500 annually. The general management is characterized as a business-like system, economy and thoroughness being visible everywhere; the men are well paid, and made comfortable; the owner superintends the smallest detail of the farm, and the production of meat and grains, with the consequent profit, is rarely rivaled elsewhere. Lastly, but not least, the farm accounts are strictly and accurately kept, so that any information as to costs, outlays, incomes, and profits, relating to any part of the business which was sought by the prize awarding committee, was immediately forthcoming. Though in some respects the details of this arrangement could not well be copied by an American farmer, every one might gain something by adopting the principles upon which the system is founded, and many might profitably adopt much of the system itself.



PLAN OF DAKOTA BARN

A Dakota Barn.

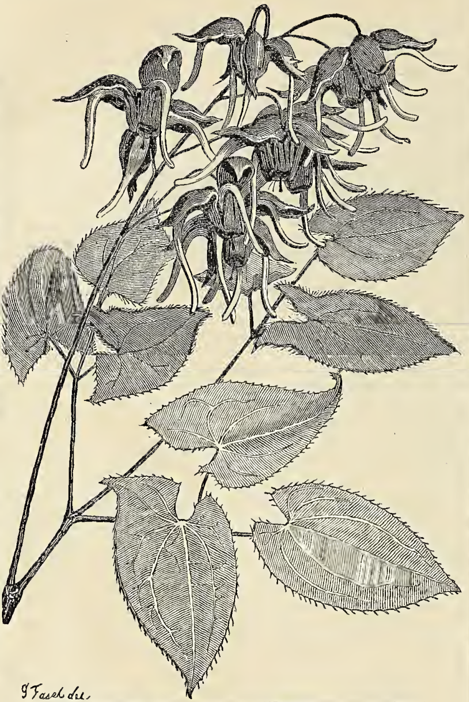
The accompanying plan of a barn, built in 1875, upon a prairie farm in Dakota, was sent by a correspondent, accompanied by a very succinct description. The barn is 88 feet long, and 54 wide, is framed with oak timber 10 inches square, and covered with boards, battened at each joint. The posts of the central part are 16 feet high, and those of the wings are 8 feet. The floors are all of 2-inch plank; there are racks and mangers to each stall. The cattle can be fed from the driving floor and hay-shoot at each end of the bay, and there is no waste room. At *A*, *A*, at each end, are loose boxes or sheds, 15x14 feet, for sheep, pigs, or calves; at *B* is a 7-stalled horse stable, 38x14 feet: at *C*, *C*, *C*, are three cattle stables, each 38x14 feet, each with 11 stalls; at *D*, *D*, is the hay bay, which, with the lofts above the stalls, will hold 100 tons of hay; at *E*, *E*, are hay-shoots, and the driving-floor is at *F*. The whole cost was $2,000. This is a plain, useful, roomy barn, and has been found convenient in use. It has features, which make it useful in localities similar to the one in which it was built. We are always glad to get plans of barns that have given satisfaction to their owners in different States.

A New Potato—The Superior.

The first question with many will be, "why more new potatoes, have we not already enough?" To which we answer that we have not enough, and more are welcomed because we need more – i. e., more that promise to be of permanent value. We have not reached that point in potato culture where we can say there is no room for improvement. The introduction of the Early Rose was a great thing for the agriculture of the country. The money value of this variety itself can never be known, but if expressed in dollars, we should have to write millions. Besides this, its consequences were equally valuable. Those who can recollect the condition of potato culture at the time the Early Rose appeared, know that potatoes had so "run out," were so few and so poor, that it seemed probable that the crop must be abandoned. The Early Rose gave encouragement; it showed that potatoes, and good ones, could be raised. It led the way in a series of new varieties, and each year brought more new potatoes, some of which are not now to be found, while a few are still valuable. It induced many to experiment in raising seedlings, some working in a careless, hap-hazard way, and others making careful crossings. As a result of all these experiments, scores of new varieties have been offered that should never have been presented to the public, but out of the whole we have perhaps a dozen, or at most 20 varieties of great excellence. It may be thought that this is a sufficient number; perhaps it would be, were we sure of holding them all in their best condition for all future time. Unfortunately new varieties are at their best when they *are* new. The varieties so much esteemed a quarter of a century ago, were excellent in their day, but they gradually deteriorated, and we must accept this as one of the characteristics of the plant, that the varieties will degenerate—some much more rapidly than others, but it is an inherent tendency in all. Being propagated by cuttings in all sorts of soils, and in the most careless manner, generally without a thought beyond the immediate crop, any plant so treated will, after a series of years, go backward. Our only hope for successful potato culture, is in the occasional renewal from seed, and the introduction of new varieties, which, after they have served their purpose, through a greater or less number of years, must give place to others. It must be recollected that it is only in the *seedling* that we start anew—with a fresh creation, so to speak. All that follow are sub-divisions of the seedling. Accepting the deterioration of the potato as a fact, we welcome new varieties, but not *all* new varieties. The mere fact that a potato is a seedling, is no proof of excellence. A new variety must have health, productiveness, and good quality as essentials, after which earliness, color, shape, and secondary qualities may be considered. Pedigree should also be taken into account, as a seedling is likely (though not certain) to inherit the characteristics of its parent or parents.

With these views, instead of regarding the introduction of new varieties a misfortune, we think it desirable, provided they possess qualities that entitle them to rank with the very best we already have. For several years past, out of the hundreds of new varieties raised, two or three seemed to good judges to possess positive merits, and this will probably be the case in years to come. Among the new kinds offered this spring for the first time, we have been most favorably impressed with the "Superior." This was raised in 1873 by Mr. E. S. Brownell, of Vermont, with whom originated the now well-known "Brownell's Beauty;" the seed was the result of crossing a flower of that variety with the Peachblow, and has since been tested in a sufficient number of widely separated localities to show that it promises health, vigor, and productiveness. In comparing it with several new varieties, we were attracted by its uniform size, its regular shape, insuring evenness in cooking, and its even surface. Some very excellent potatoes have their eyes so deeply sunken that a large portion is wasted in peeling—a point not generally considered, but one of great importance, especially to those who buy potatoes, and entrust them to the tender mercies of a kitchen maid. The engraving shows the general appearance. The skin, which is fine and smooth, is of a dark-red or copper color. As a table potato we regard it as taking rank with the best, and it retains its good qualities until late in the spring.

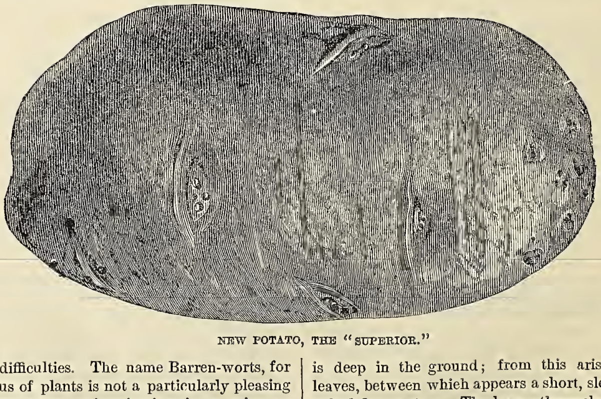
For its manner of growth and productiveness we must depend upon the testimony of others. We are informed upon excellent authority that in the past unfavorable season it exhibited a remarkable yield. One grower of our acquaintance having raised 673 lbs. from one pound of seed, and states that the tubers are borne close to the stalks. In season it ranks with the medium early kinds. Samples were sent last spring to England for trial; the English have not, as a general thing, regarded American potatoes with much favor, but the different horticultural journals agreed in awarding high praise to the "Superior," and at the great potato show at Alexandra Palace, last fall, it received a Certificate of Merit, which there is a high commendation. With a view to allow a variety of so much promise to be generally tested, the publishers of the *American Agriculturist* have made arrangements, by which a trial sample may be easily obtained, as will be seen by their offer on another page. Should it succeed elsewhere, as well as in the trials made last year, its distribution will prove a real benefit to all who procure it.



LARGE-FLOWERED BARREN-WORT.—(*Epimedium macranthum.*)

Barren-worts—Epimediums.

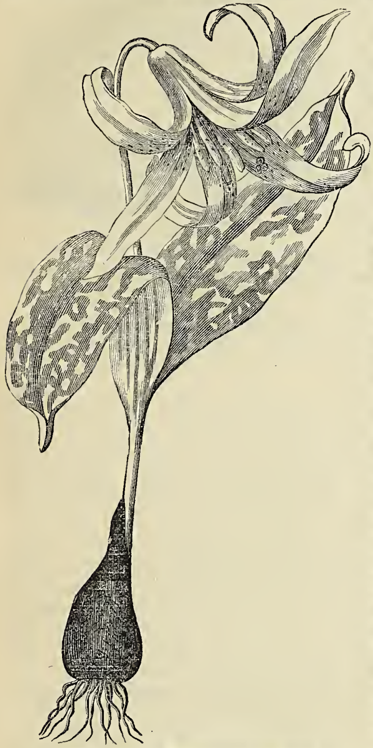
Those who complain of botanical names will find that the popular or English names have their difficulties. The name Barren-worts, for a genus of plants is not a particularly pleasing one, and when we inquire into its meaning we find that it has none to speak of. At most we learn that in olden times some plants were supposed to cause barreness. It may have been these—then again it may have been some others. The name *Epimedium*, *Epi* upon, and *Media*, a country in Asia, was given because some species were found in Media. In spite of names they are among the most charming of spring hardy flowers. The alpine species, *E. alpinum* is the one most frequently cultivated, and though an interesting plant is much less showy than the one here figured, the Large-flowered Barren-worts, *E. macranthum*, from Japan. This has been in cultivation some 30 or 40 years, and is yet a rare plant. It blooms in May, and produces rather handsome, divided foliage, which is at first brownish, but soon becomes a delicate pale green; the leaflets, of the size and shape shown in the engraving, are delicately fringed with small hairs. The flowers are borne well up above the foliage in abundant and most graceful racemes, and are here represented of the natural size. The curious crooked appendages are the petals, these are in the form of tubes or spines, of a pure white, and semi-transparent. Directly beneath the petals are the sepals or parts of the calyx, which, being of a rosy purple, are in marked contrast with them. The whole plant is from 10 to 15 inches high, and anything in the way of a hardy plant, with more real grace and beauty it would be difficult to find. We have wondered why this was not more generally in the catalogues, and find the reason right at home. We had a clump of it several years ago, and have the same now. The proper time to divide and reset it, is when it is just out of flower, and that is at a time when everybody is too busy to attend to dividing perennials. If divided, like most other perennials, in the fall or early spring, it is apt to die outright, or be a very long time in recovering strength to flower. It is worth any required trouble at any season



NEW POTATO, THE "SUPERIOR."

The Adder's Tongue—Erythronium.

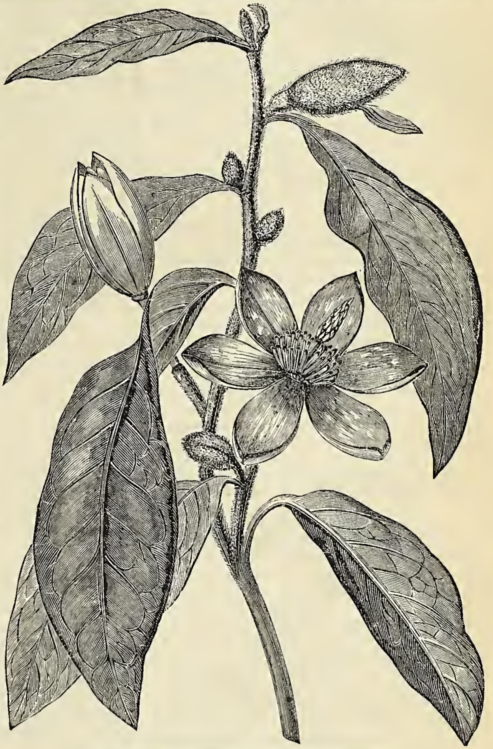
The Adder's-tongue, *Erythronium Americanum*, is one of the most widely known of our early spring flowers, it being found all the way from Canada to Florida on the Eastern side of the continent, but far west it is replaced by other species. It grows in moist soil, especially along the edges of woods, and the margins of thickets. Its solid bulb, with a brown coat, is deep in the ground; from this arise two leaves, between which appears a short, slender, naked flower stem. The leaves themselves are quite showy, being broadly, lance-shaped, flat, smooth and shining; their pale-green color is usually mottled and dotted with brownish-purple and whitish markings, and they are often as handsome as the leaves of some of the most prized exotic "foliage plants." The flower stem, six inches or more high, bears only a solitary nodding flower, an inch or more long, which appears, according to the latitude, from February to May. The flower is seen at its best only on bright, sunny days; in dull weather, or very early and very late in the day, the petals are nearly straight, and the flower almost closed; in the clear sun the petals are handsomely curved backwards, and the flower then appears like a small lily. The petals are pale yellow, the three outer ones usually tinged on the outside with purplish, and there are often brown spots at the base within. The flowers are remarkable for the length of time they endure, as they last from three to four weeks. Our special object in mentioning this plant, is to remind our readers who admire it in the wild state, that they will like it still better if they bring it into the garden. Like many other plants that naturally grow in moist places, this not only will live in the drier soil of the garden, but be greatly improved in size by the change. The engraving was made from a garden specimen, which was sketched before the stem had reached its full hight, hence it has a dwarfish appearance, which would have disappeared in a few days. The proper time to take up the wild bulbs is when the leaves begin to fade, showing that they have finished their work of maturing the bulb. The bulbs that produce but one leaf, are too small to flower, and may be rejected if the larger ones are plenty, though they will soon grow large enough to bloom. The bulbs may be planted along the edges of shrubbery, near rock-work, or in the open border, where they need not be disturbed until they increase so as to become crowded, which will be in three or four years; they should be set as deep as they were originally.


ADDER'S TONGUE.—(*Erythronium Americanum.*)

A white-flowered species, (*E. albidum*), is found in some northern and western localities; it also does well in the garden. The far-western *E. grandiflorum*, we have not tried. The European alpine species *E. Dens-canis*, has purplish and sometimes nearly white flowers. Its bulbs are imported in the fall with Hyacinths and other Dutch bulbs, but though we have made several trials, have failed to make them grow; probably the bulbs are taken up at the wrong season. This is known in Europe as the "Dog's-tooth Violet," a name sometimes applied to ours; it is strange that the appellation should be given to a plant so very unlike a Violet, not only in form but in color, and should be discarded for our native species, in favor of "Adder's-tongue," which, if not very elegant or appropriate, has at least the merit of not leading to confusion. The systematic name *Erythronium*, is equally unfortunate; it is from the Greek for *red*, which does not apply to the European species, and still less to any of ours.

The Dusky Magnolia—Banana Shrub.

The plant we are about to describe is so far from being new, that it is within a few years of a century since it was introduced into cultivation; but new things are not always the best, and we feel that we do our readers better service, when we rescue a good plant from unmerited neglect, than we do in introducing to their notice a recent but untested novelty. Here is one of the most charming of cultivated plants almost entirely ignored in works on horticulture, and rare in collections. The plant in question is the Dusky Magnolia, (*Magnolia fuscata*), from China, a much branched shrub with slender spray; sometimes reaching 10 or 15 feet, but generally much smaller. In habit, and in its evergreen foliage, it has much the aspect of a Camellia; the young stems, young leaves, and also the flower buds, are of a blackish-brown color, a peculiarity that gives it the specific name, *fuscata*. The flowers, solitary in the axils of the leaves, are of the size and shape shown in the engraving; the petals are thickish and slightly tinged with brownish-red; the stamens and pistils are similar in structure and arrangement to those in the large-flowered species. The flowers are remarkably fragrant, not like those of most other species, with a heavy oppressive odor, but the fragrance is very fresh and pleasant, and so strikingly like that of a ripe Banana, that it has received the popular name of "Banana Shrub." In the Southern States, where the stranger is astonished to see Camellias flowering in door-yards and cemeteries, this is a popular ornamental plant, and deservedly so, as it combines beauty and fragrance in an extraordinary degree. We do not know how far north it has proved hardy, but from the fact that it stands the winters in favorable situations in England, we suppose that in parts of Virginia it may be left in the open ground without injury. Those who live in more severe climates must be content with this Magnolia as a pot-plant, and we regard it as a most desirable one. Though it will reach the hight we have mentioned, still it will flower when quite small. The branch from which the engraving was made, was taken from a pot-plant scarcely two feet high, and bore some two dozen flowers; we have had it flower freely when only a foot high. The treatment is of the simplest kind. It is potted in a soil made sufficiently open to allow water to drain off readily. During summer the pots are set in the partial shade of a fence, or screen, taking care that they are properly watered. When cool weather approaches, they are put with other nearly hardy plants in a cool greenhouse, so cool that frost is barely kept out; when the swelling of the buds shows that the plant is about to flower, it is taken into a warmer


THE DUSKY MAGNOLIA.—(*Magnolia fuscata.*)

greenhouse, where the flowers open in succession during a month or more, and even a single flower will diffuse its grateful odor throughout the greenhouse. We have no doubt that this Magnolia might be easily managed by those who have no greenhouse by keeping it in a room where there is no fire. Of course in the dry atmosphere usually found in rooms heated by a furnace or a stove, the buds will fall before they are fully developed. We obtained our plants several years ago from Mr. P. J. Berchmans, Augusta, Ga., in whose interesting grounds are some fine specimens of this, and other broad-leaved evergreens.

Geraniums with Pure White Leaves.

BY PETER HENDERSON.

A correspondent, C. A. B., of Westerly, R. I., says, "I send you by this mail some pure white leaves from a Geranium shoot, can it be made to grow and form a plant like any other slip? I have tried it and failed."—No, it can not be made to grow! It has no doubt been tried thousands of times, but a plant has never yet been produced; we have had a few sickly roots form, but only to remain for a short time, when the whole would die off. Even if the white shoot is allowed to remain on the plant producing it, and all the other shoots having green in the leaves be cut off, the plant, though it now has all the roots which it originally had to support it, will surely die, no matter what care is given, unless a shoot with green leaves is allowed to grow. By allowing some green leaves to remain, the white shoot may be kept growing for years, in company with the green, but never alone. This answer will have a general interest to many of your readers, who, on finding these white-leaved shoots on their plants for the first time, imagine they have fallen upon a small fortune. Of course, if a Geranium with pure white shoots and leaves could be made to live and grow freely, there are plenty of our florists who would gladly invest some thousands of dollars in its purchase.

A few days ago, being in the greenhouse of one of our well known florists, he showed me, growing among a mass of "Smilax" foliage, (*Myrsiphyllum*), a strong vigorous shoot of a Geranium with stem and leaves as white as snow. I was perfectly nonplussed for a few moments, as on examining the root there was apparently no shoot except the white one, but on scraping the soil off for a couple of inches, I found the waggish owner had trained a strong shoot, nearly six feet high behind the screen of Smilax, which at once accounted for the healthy condition of the white shoot,—the plan was ingenious, and was done in such a way that, had the florist been dishonestly disposed, he might readily have found a purchaser, as his white branch had nearly all the vigor of the green shoot. If we once detach the white shoot from the life-sustaining green portion, death to the white is only a question of time—and very short time too.

The Jerusalem Artichoke once More.

BY PROF. ASA GRAY.

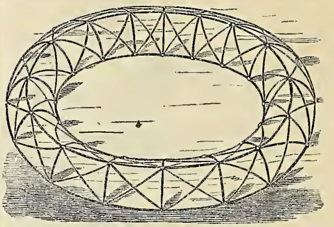
I have more than once given out intimations that I had reason to believe that this esculent originated in the valley of the Mississippi, from a species of Sunflower, (called *Helianthus doronicoides*, by Lamark,) which is common there. The reason is,—1, That the foliage, flowers, and mode of growth of this wild species are much like those of the cultivated artichoke, except that the tubers are long and slender—are commonly root-stocks rather than tubers. 2, But having planted these, and raised them in the garden for a dozen or fifteen years, I found that some tubers are long and narrow, and rather tough, while others are good "artichokes." It is possible, however, that they had got mixed with the old cultivated plants, some of which grew near by. 3, But last autumn Prof. John M. Coulter sent me, from Indiana, roots of the wild Sunflower in question; and I noticed that, while some were quite like my original stock from Kentucky, others were shorter and thicker, and a few were to all appearance good artichokes.

Now Linnæus, in the Species Plantarum, gives Brazil as the native country of *Helianthus tuberosus*, the Jerusalem Artichoke. We can trace the origin of this misconception, but, without entering into details, we will only say that these artichokes no more came from Brazil than they did from Jerusalem. But Linnæus, in an earlier work, (the Hortus Cliffortianus), says they came from Canada. That, on the other hand, seemed to be too far north; but I have thought it probable that they reached Europe by way of Canada, and Canada by way of the Great Lakes and the Mississippi or Ohio. But I had not ascertained that any of our Indian tribes knew of this tuber, and had ever cultivated or used it. That was because I had not investigated the question as I should a botanical point, and because I did not apply to the proper source for information. The reference to a statement in "Palfrey's History of New England," made it apparent that there was evidence upon this point somewhere in existence; and an enquiry made of our most learned scholar in Indian lore, Mr. J. H. Trumbull, of Hartford, Conn., now brings the facts to light.

It appears that Sagard, in his "History of Canada," (1636), and in his "Grand Voyage," mentions, as among the provisions of the Hurons, "roots that we call *Canadiennes* or *Pommes de Canada*, and that they call *Orasquienta*, which are not very common in their country. They eat them raw as well as cooked," etc. He mentions potatoes ("potates") which he had seen on board an English vessel, and which, "they say, if cut in pieces and planted in the earth, in short time grow and multiply, like the *Pommes de Canada*."—This seems to show that the Huron Indians had artichokes in cultivation. Still earlier, viz., in 1612, Lescarbot, in his history, mentions roots found in the country of the Armonchiquois, (Canada and Northern New England), as big as turnips, which were excellent eating, of a flavor reminding one of *Cardoons*, and which, when planted, multiply in a marvellous fashion. Possibly these may be the tubers of *Apios tuberosa*, or Ground-nut, but the account agrees much better with Artichokes. Now the evidence which the old herbalists furnish, and which Mr. Trumbull has looked up, make it clear that Jerusalem Artichokes went from Canada to Europe within a dozen years after the first settlement of Canada, viz., at Quebec. I cannot here enter into particulars; but suffice it to say, that the plant was received in England, "Anno 1617," and Italy, early enough to have got the name "Jerusalem Artichoke" established at the date of Johnson's edition of "Gerald's Herball," 1633; for this *Jerusalem* is doubtless an English corruption of *Girasol*, sunflower; and the plant was at a very early date cultivated in the Farnese Garden.

A New Edging to Flower Beds.

Numerous plants are used as edgings to flower-beds, but we do not often see those that are altogether satisfactory. Where the edging is made by numerous plants set closely together, the failure of one or more from any cause, leaves an unsightly gap, and one that is very difficult to fill. We saw last summer at the Mt. Airy Nurseries, of Miller & Hayes, Philadelphia, an edging that was both novel and satisfactory. The plant employed was the Golden Japanese Honeysuckle, which was introduced a number of years ago as *Lonicera Japonica aureo-reticulata*, that, in spite of its name, has proved to be one of the most satisfactory and permanent of variegated plants. Its use for edging was not new, but the manner of using it was so. A circular galvanized wire-frame, of which a cross-section is a semi-circle, is made of a proper size for the bed, if a small one, or in segments, if for a large bed; this frame, which has wires crossing it to form a coarse basket-work, is placed around the bed, where the honeysuckle plants have been previously set, and as the plants grow, their shoots are worked into this wire frame. In a short time the frame is completely hidden, and the effect of such a circle of golden foliage in neatly kept grass, is surprisingly beautiful. This frame, invented by Mr. C. H. Miller, who was the Chief of the Bureau of Horticulture at the Centennial, may be used to advantage with other edging plants, as it raises the prostrate ones, and allows them to be kept in a neat line, with very little trouble. We have not seen it used for Ivy, but do not doubt that such a frame would serve admirably.



WIRE FRAME FOR EDGINGS.

Some Valuable Native Forest Trees.

BY PROF. C. S. SARGENT, DIRECTOR OF THE ARNOLD ARBORETUM, OF HARVARD UNIVERSITY.

As the planting season is at hand, I would call the attention of your readers to the claims of some of our native trees to more general cultivation and appreciation. I have already pointed out, ["Suggestions on Tree Planting," from which we quoted in July, 1876.—Ed.], the pecuniary advantages which would follow the general cultivation of the

American White Ash, (*Fraxinus Americana*),

in the State of Massachusetts; as great or greater advantages would follow its cultivation in all the Northern and Western States. As an investment the Ash is the best tree, native or foreign, we can plant on strong, cool soils. The uses to which the wood of this tree is applied are innumerable, and so long as we ride in light carriages, or use light agricultural implements, or ship's boats are propelled by oars, it will always be in demand. Such toughness and elasticity, combined with such lightness, are found in no other wood of which we have any knowledge. It must, then, of necessity, enter into the construction of many useful articles, and the demand for it will certainly increase in the future, as population and prosperity become more general. There is already an active export trade in White Ash Lumber to Europe, Australia, and some of the South American ports, countries which produce no native wood which equals it in its peculiar qualities; and should the supply warrant it, this business is capable of immense developement in the future. For years the destruction of this, our most valuable timber tree, has been enormous. Every year the source of supply is pushed further westward, so that now it is becoming rare to find Eastern grown ash even quoted in our seaboard markets, and the West alone supplies the clear, wide boards, now so highly prized for furniture-making, and the interior finish of dwelling houses. But to counteract this ever increasing destruction, and to provide for a future supply, what is being done? How many persons in this country have ever planted five thousand, or even five hundred, White Ash trees? I fancy, judging from the supply of young Ash plants in our nurseries devoted to the growth of forest trees, that the number of such far-seeing individuals must be small. I have only been able to procure for a Massachusetts friend, who desires to plant largely of this tree, and after applying to all our large nurseries, some ten thousand young plants. The deduction from this fact is a simple one. No demand, therefore no supply. The aphorism so often repeated, that tree planting will only bring profit to those that come after the planter has passed away, does not apply to the White Ash, as it has a market value at any time after it is ten years old. For this reason it is recommended to plant the Ash thickly in rows, which need not be more than four feet apart, with a view to thinning out the young plants, until only the right number are left to develope into large trees. The thinnings from an acre of White Ash, planted in this way, would, at present prices, sell for at least four hundred dollars for hoop-poles, while subsequent thinnings would be of still greater value; and these thinnings, it must be remembered, are made, not at the expense of the future plantation, but to benefit and improve it. The White Ash should be more generally employed as a roadside or avenue tree. Indeed, in view of its many qualifications, the Sugar Maple alone, among our native trees, surpasses it for this purpose. It is many years since the White Ash was first introduced into Europe, and the fine specimens which are occasionally met with, both in Great Britain and on the Continent, sufficiently prove that its general cultivation in Northern and Central Europe would make a valuable addition to the forest products of those countries.

Yellow or Short-leaved Pine, (*Pinus mitis.*)

Next to the Long-leaved Southern Pine, this tree produces the most valuable timber of any of the North American pines. Fifty odd years ago, a London lumber merchant testified before a Committee of the House of Commons, to the fact that the value and durability of the timber of this tree was greater than that of any other pine, which at that time reached England from America. The younger Michaux, speaking of this tree in the "North American Sylva" says: "Long experience has proved its excellence and durability. In the Northern and Middle States, and in Virginia, at a distance of one hundred and fifty miles from the sea, the floors, the casings of the doors and wainscots, the sashes of the windows, etc., are made of this species, as more solid and lasting than any other indigenous wood. But for whatever purpose it is employed, it should be freed from the sap, which speedily decays. Immense quantities are used in the dock yards of New York, Philadelphia, Baltimore, etc., for the decks, masts, yards, beams, and cabins of vessels, and it is considered next in durability with the Long-leaved Pine."

Not only was the Yellow Pine at that time, and for many years afterward, extensively employed in all our Eastern cities and dock yards, but large quantities, under the name of "New York Pine," were annually exported to Great Britain and the West Indies. To day, so nearly exterminated has this tree become, that it is doubtful if it ever reaches the markets of New York and Boston in any large quantities, and it is many years since it ceased to be an article of exportation. Here then, is a tree worthy of the attention of those interested in forest planting. As a timber tree it is inferior to the Long-leaved Pine, but as the latter only grows naturally on the Atlantic seaboard, south of Virginia, the range where its cultivation would be possible is limited to that portion of the country. The Yellow Pine has a wider range; indeed none of our North American pines extend over so much territory. In the East, the State of New Jersey must, at the present time, be considered as its northern limit, while in the West, its most northern station is a few miles northwest of St. Louis. In any part of the United States, south of these points, and where there is a light, sandy soil, the cultivation of this tree can be undertaken with the certainty of future profit; and there is every reason to hope, that the range within which its cultivation can be made, not only possible but profitable, can be extended on the Atlantic Seaboard as far north as Cape Cod. As an ornamental tree, few of the family surpass in beauty the Yellow Pine, and it should certainly find a place in all collections of ornamental trees.

In outline, the old trees are conical, an unusual form of growth in Pines, and one which has earned for it in some portions of the South the name of "Spruce Pine." This peculiarity of habit, which is owing to the short upper branches being depressed toward the main stem; its charming feathery foliage, and rapid growth, make this tree worthy of general introduction.

[*The remainder another month.*]

The Oyster-Shell Bark-Louse.

An article in December last, giving an account of the successful use of some undrying oil in the destruction of the Oyster-shell Bark-louse, has called out communications from two correspondents, both of whom state that they have been equally successful by other means. We condense and give the essential parts of both articles.

CRUDE PETROLEUM. — "D. L. B.," Proctor's Creek, Va., was six years ago living in the oil regions of Pennsylvania, and went on a visit to his father in Central N. Y., taking with him a can of crude petroleum, fresh from the well. His father had two young apple trees in the garden, which, in spite of all that could be done for them, were going to decay, and he requested the son to cut them down. Mr. B. suggested that he would first kill the trees, so that there should be no trouble from sprouts, and to do this he, in February, took a broom and completely washed the trunks and larger limbs with the crude petroleum, noticing at the same time that they were thickly covered with the bark-lice. In the following spring, to the astonishment of all, the trees started out with renewed vigor, made a greater growth than they ever did before, "and the bark was as smooth and healthy as that of a one-year-old seedling." Since then the trees have flourished and borne abundantly. Mr. B. suggests that the application should be made before the buds swell at all, as petroleum will kill the foliage. We would add to those disposed to experiment in this direction, that neither kerosene nor any other preparation from petroleum should be used as a substitute for the crude article, just as it is drawn from the wells.

LIME OR WHITE-WASH.—"W. E.," of North Haven, Conn., takes the best fresh-burned stone lime, slakes it with hot water, and thins with cold water to the proper consistency to apply readily, and with a common broom—a round one preferable—paints over the trunks and larger branches. Thinking that we had somewhere seen the statement that lime had been tried by others without effect, we wrote Mr. E. to make sure that it was the Oyster-shell louse that he had in mind, and he replied that it was, and finds lime perfectly efficacious. Though not now troubled by the insect, he would apply lime whenever he discovered it. Mr. E. regards a coating of lime-wash as highly useful in other respects, and wonders why its use is opposed by some. Upon young trees, in which the bark is still active, we prefer not to clog it with a coat of lime, but if any wash is needed, use a more soluble one of lye or soap; in older trees, when the outer bark is dead and has begun to scale off, it makes no difference, except as a question of looks.

In treating this Bark-louse, as well as in all contests with insects, success will depend largely upon prompt action, and attacking the enemy as soon as possible after it is discovered. Young trees especially should be watched, for it is an easy matter to treat a tree, all parts of which are within reach, compared with another two or three times the size. We have no idea that washing the trunk, merely, of a tree, with white-wash, petroleum, or other application, will rid it of the Oyster-shell Bark-louse. These are situated upon the newer growth and small limbs, and any application that fails of reaching these, can be of little if any service so far as this particular insect is concerned. It is very important to avoid introducing this pest, and every new tree from a nursery or elsewhere should be examined for bark-lice, before planting it.

* * *

APPLES ON PARADISE STOCK.—A correspondent in Maine asks what effect the Paradise stock has on the quality of the fruit. None whatever, except incidentally. It is the tendency of the dwarf trees thus produced to overbear, and if all the fruit that sets is left on, it will be, as on other trees, inferior in size and quality, for want of sufficient nourishment. By thinning, when needed, as fine specimens of the largest varieties may be had upon these as upon large trees. So far as we are aware, any of the varieties will do well on this stock.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Eggs and Ways of Using them.

In spring time, if ever, eggs may be freely eaten, for now they are abundant, cheap, and of good quality. Fortunate for the farmer's family is the change which often takes place in early spring from the steady use of salt pork, to a dish composed largely of eggs. Dr. Edward Smith says: "It would not be possible to exaggerate the value of eggs as an article of food, whether from their universal use, or the convenient form in which the food is preserved, presented, and cooked, and the nutriment which they contain." Again he says, "There is no egg of a bird known which is not good for food, or which could not be eaten by a hungry man." There is in the egg of every species a division into white and yolk. The white of egg consists of nearly pure albumen and water; the yolk, of albumen, oils, sulphur, and water. Albumen is considered the most important single element of food. It is found in all compound animal structures, and in the vegetable productions most valuable as food, though in a modified form.

There is a great difference in the value of different eggs, as there is in their size and flavor. Well-fed domestic fowls yield far richer food in their eggs than common wild fowls. Many suppose that raw eggs are more easily digested than those that are cooked, but for most persons this is not the case, if the eggs are not cooked improperly. Dr. Smith thinks it a mistake to give a mixture of raw egg and new milk to invalids, such a mixture tending more to hinder than to promote digestion. Dyspeptics often think that they cannot eat eggs at all, and it is the case that delicate stomachs do sometimes suffer greatly from eating any but the freshest of eggs. When we can not be sure of the age of the eggs provided, it is always most safe to break them before cooking. For invalids the very safest way is to drop the egg from the shell without disarranging its form, into water boiling in a shallow dish. A few minutes' boiling is sufficient, and no dressing is really necessary except a trifle of salt for those who eat everything salted, though of course good butter and pepper may be added, or the egg may be carefully laid upon a slice of toast. For a family of children it is often more convenient in all respects to serve eggs in scrambled form or in omelettes, than cooked separately. Some children are notional, and will not eat the white of the egg, others think they dislike the yolk, but when they are both cooked together, they think nothing about it, but eat with pleasure all that they can get. In most recipe books the directions for scrambling eggs advise a "good piece of butter" with which to cook the eggs, seasoning them with salt and pepper and with chopped parsley if you choose and can. But if for any other reason you prefer it, you can use milk instead of butter, and for children this is best. The proportions used for an omelette are very good, "a cup of milk for six eggs." This increases the quantity. The eggs are broken but not beaten, and are stirred simply to mix well and prevent burning while cooking.

Omelettes are not common in the country. The usual recipes are enough to frighten one, because they enjoin extreme caution lest the omelette may fall or be heavy. At our house we have always had good success with the following recipe, perhaps because of the flour or corn-starch used, perhaps because we baked it in the oven in a shallow dish, which we set upon the table, and so had no trouble about turning it over or turning it out:

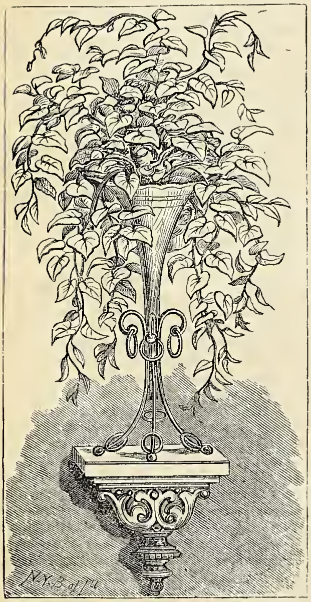
"Six eggs, the whites beaten to a stiff froth, the yolks well beaten; one teacup of warm milk, in which a small bit of butter is melted; a table-spoonful of flour or corn-starch, wet to a paste with a little of the milk, and stirred into the cup of milk; a teaspoonful of salt and a little pepper. Mix together, adding the whites last; bake immediately."

[While this is an excellent breakfast-dish, it is hardly to be called an omelette—an omelette is always cooked in a frying-pan, with butter.—ED.]

Custards, well made, are not only delicious, but they are nutritious and wholesome for most people. In making boiled custards, much stirring increases the lightness and apparent richness of the product. A custard should be boiled in a farina kettle, or something corresponding—that is in a water-bath, made by setting a pail or other vessel into a kettle of boiling water, to avoid all danger of burning. Boiled custards may be made with one or two eggs and two table-spoonfuls of corn-starch to a quart of milk; or from four to six eggs to a quart without the starch.

Kindergarten Tracts and Occupations.

Some months ago I learned, through the "Household" of the *American Agriculturist*, that tracts about the Kindergarten could be obtained gratis from E. Steiger, 22 Frankfort St., New York. After considerable delay, I sent for them, and a package of gayly-colored leaves came promptly in return. They are so good that I want more to scatter where they will be appreciated. One set of these tracts is offered gratis to any applicant. More sets can be obtained at the rate of five cents a set. As the Kindergarten Association is anxious to extend a knowledge of the Kindergarten, and as its members act with considerable missionary spirit, no one obliged to look sharply after the pennies, need hesitate to ask free copies of the tracts. But somebody has to pay for them, and persons of means who are in sympathy with the movement, will of course be glad to help it financially ever so little.


SWEET POTATO VINE.

The bright-colored leaves are coveted by little children, to number among their own treasures. To preserve them, and to make them do duty as long and as widely as possible, I stitched them together, with a neat, strong paper cover, and on the outside I wrote my name, so that when I lend them they may be less likely to get lost. If I get more sets, as I now intend, to send to friends, I mean to stitch each set of those together before I part with them. The tracts contain considerable variety and on matters by various authors.

"Kindergarten Occupations for the Family," are now offered. These are selections from the series of gifts used in the Kindergarten, with directions for their use. They are attractive playthings, and, better than that, they are charming means of education. It will not pay to get them for any child who has no mother, or other elderly friend, sufficiently *at leisure* to see that proper care is taken of the occupation material, and that it is properly used. Tract No. 1 answers the question, "What is the purpose of Kindergarten education?" Among other things it aims "to make the *conscientious mother in easy circumstances about her child's best education during its tenderest years*." So far so good. Now bring along the "*easy circumstances*," else what becomes of the "child in its tenderest years," and what is the lot of the "conscientious mother?"

Some years ago I obtained a set of Kindergarten gifts, and began to use them with my eldest child, then four years old. We got along finely with them during the few months while his little sister was with her grandmother, but so soon as I had both children together, the little one interrupted all systematic work. Soon there was another babe in my arms, and I had no chance to do any technical kindergartening, and so it has been from that day to this. I put away the books (Weibe's Paradise of Childhood) and most of the gifts, and tried to make the best of circumstances. A few weeks ago a little ransacker came across the books, and brought them to me for explanations. The eldest child told what happy times he had when mamma used to give him Kindergarten lessons, and wondered why they were discontinued. The next two in age felt that they had been somehow defrauded of their rights, as they looked over the diagrams, showing what beautiful work may be done in the Kindergarten. All this was too much for my equanimity, and (weak and contemptable as it may have been), I had more than one hearty crying spell over these tokens of my former hopes and disappointments. I found, however, that the children were now old enough to study out some of the designs for themselves, and a new impetus was given to paper cutting, and the tablets especially came again into favor. I ruled large sheets of paper into inch squares, and three children employ themselves very happily sometimes, laying tablets in pretty designs upon these squares; while the fourth child also "plays with tablets," but without much regard to designs.

The Kindergarten drawing lessons, too, have been undertaken in earnest, and I am learning to appreciate them. They prove much more attractive than I supposed they would. Though they are very elementary, they are good discipline for hands and eyes. The blocks have been an almost daily delight for six years. They are easily lost, and they should be packed carefully into the boxes each time as soon as their use is over. I pursued this plan until within two years, and so long had good success in keeping them, but at last they were allowed to be gathered up by handfuls and heaped in a large box, Crandall blocks, fifth gift and sixth gift all together, and now nearly half are lost. But every day somebody here plays with the blocks, usually to build fences and barns for the care of the fine stock, roaming about this establishment in the shape of "urkins," as the youngest child names the fruit of the oak. Country children, in summer, have no great need of the Kindergarten occupations for home use, there are so many pleasant employments and means of instruction within their reach. But in winter they have time and need for these things, and the "Occupations for the Family" may be made very useful.

To Mend Toy-Boxes.

Now it is the box that held the dominoes which has one end broken out. The Kindergarten boxes that held the blocks were very frail for family use (perhaps there are stronger boxes now), and before they broke down entirely, they gave me some bother. I had them mended with glue two or three times, and finally matched them together and pasted a strip of strong cambric around them in such a way as to make them firmer than ever before. This is the best way now known to me for mending thin wooden toy-boxes.

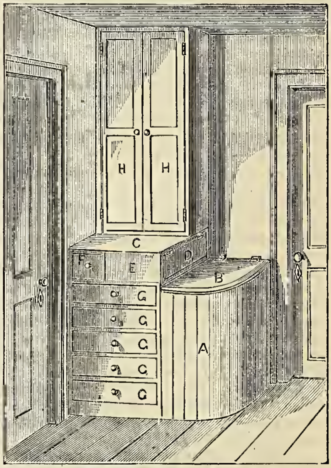
Children's Shoes.

Won't somebody please beg the shoemakers to stitch the children's shoes so that they will not rip open in the seams on the least provocation? The machine stitching looks very nice, but long before the leather wears out (if copper toes or silver tips preserve it, as they always should), the sewing over the foot gives way—or so it goes at our house. I try to stitch them together again with a needle and coarse black thread, but such sewing does not last.

Children of five or six years of age are sometimes attacked with a desire to do their walking about the house mostly on their heels. This causes the shoes to burst through on the back, and makes the heels run over badly. Of course, such gymnastics should be discouraged. The feet of Chinese female children are bandaged tightly, to prevent their growth into the vulgar proportions of nature's pattern. American children's feet are sometimes dwarfed by keeping them in shoes too small to allow of their natural growth during their early growing years. This, if persisted in, actually causes corns on the feet of children two or three years old.

The Vine in the Window.

Mrs. H. E. J. The vine you describe as draping a window so handsomely, was no doubt the Sweet Potato. At all events, that will answer your purpose, as it will endure the hottest sun, and appear to enjoy it. The sweet potato vine is not so often used as an ornamental plant, as it would be, were the beauty of its dark green foliage generally known. It is very easily managed, being usually grown in water, though it may be set in earth in a pot. A hyacinth-glass, or other glass, or whatever may be the most convenient vessel to hold the water, may be used, and a good, sound sweet potato selected, of such size that it will rest upon the edge of the vessel, with its lower part just touching the water. It requires a considerable heat to start it, and should be set in a warm place, where it will have a temperature of 75° or 80°. Light is not needed until the shoots have started, but when growth has begun, then give it a sunny place. If many shoots start, remove all but three or four of the strongest, or, if the vine is to be trained to run up over the window, two will be better than more. Grown in a vase set upon a bracket, as shown in the engraving, and the branches allowed to fall down gracefully, it makes a charming ornament; in this case a number of small and slender shoots are preferable to a few large ones, and several buds may be allowed to grow. All the care needed is to add water, which, when the leaves are numerous, will be taken up and evaporated very rapidly.



A CORNER CUPBOARD.—(*See next page.*)

* * *

HAIR DYES.—A few years ago we gave an account of the analyses of the various hair dyes, made under the direction of the Board of Health of New-

York City. Recently similar analyses have been made and published in London. Of 21 "Hair Dyes" and "Hair Restorers" all but four, notwithstanding they were labeled "perfectly harmless," "free from all injurious substances," contained lead and sulphur in some form. One of the four was a preparation of nitrate of silver, and the remaining three, being to convert dark hair into blonde, were a highly active bleaching compound. The use of the dyes containing lead, especially if long continued, may produce the most deplorable results, such as paralysis, without the cause being suspected, and the bleaching mixtures, without being absolutely poisonous, are very injurious to the hair. The only safety is in avoiding the use of *all* hair dyes.

Household Conveniences and Hints.

A correspondent who is engaged in the house-furnishing business in Brunswick, Me., and who has in former years made occasional contributions to these columns, now sends several suggestions, which we give under the above general head.

A Corner Cupboard.—A corner of the kitchen between two doors, was utilized as shown in the diagram on the preceding page; the arrangement is found, in practice, to be comprehensive, compact, capacious, and convenient, and suits *us*. It comprises a covered closet for the flour barrel, places for mixing pan, molding-board and rolling-pin, and an abundance of that of which a housekeeper rarely has too much—drawer and closet room. The flour-barrel is behind *A*, which is all in one piece, and is kept in place by hooks or hasps on the inside, and dowels in the bottom, which set into holes in the floor. The flour is reached by lifting the cover, *B*. *C* is the top of a case of drawers, of convenient hight, and of a width to suit the space, which in the present case is 24 inches; *F* is a small drawer for the rolling-pin. Beneath *C* is a space (*E*) for the bread pan, and for the molding-board, which slides in on cleats; these are reached by the door, *D*, which lifts, and is provided with a spring-catch to hold it in place. Below are drawers, *G*, *G*, and above a closet closed by the doors, *H*, *H*, and arranged with shelves as may be needed.

Steaming Brown-Bread.—Those who steam their Rye and Indian brown-bread, are sometimes troubled by having the loaf stick to the bottom of the kettle in which it was steamed. This may be avoided by having a disk of tin made of just the size of the bottom of the kettle, and with its edge turned up a *very* little. Place this in the bottom of the kettle before putting in the dough, and you will be delighted to see how easily the loaf will turn out.

Taking Care of the Broom.—It is a little matter, but the proper care of the broom is one of the small economies that pay not only in the saving of money, but more largely in comfort. A broom that stands, when not in use, upon the brush part, very soon squats into a one-sided shape, and is very apt to fall down and get under foot. A string or screw-eye in the handle, to hang the broom by, is often in the way of the hand when sweeping. So unsatisfactory are the usual ways of disposing of a broom, that the inventive Yankee has taken up the matter, and patented broom-holders are offered for sale to housekeepers. But one need not wait for the vender of the "Patent Broom-holder" to come along; just put two wooden pins into the wall about two inches apart, to admit the handle between, and allow the broom part to rest upon them, and you will not need to buy, as you have as good a broom-holder as can be invented.

Amusing the Youngsters.—It is a real household "convenience" to have something at hand that will amuse the little folks. I have never seen a common "black-board" proposed in your paper or elsewhere, for the amusement of children. We made the discovery by accident, and nothing has proved so engaging in our family, as a black-board and a piece of chalk or white crayon. Such boys, horses, dogs, cats, and other figures as have appeared! A board of any size will answer, but 2x2½ feet is a good size; cleat the ends, so that it will not warp, and paint it on both sides. Try it.

About Moths and Millers.

Mrs. "E. A. K.," Taunton, Mass., asks the following: (1) "Do all kinds of millers make moths? (2) What time in the year are moths formed? (3) Do they work in woolen goods all the year, or only in warm weather?"—*Ans.* (1) The writer, a lady, evidently wishes to know about the clothes moth, and her first question may be answered—No. But as the terms "Moth" and "Miller" are used in a confusing manner, we must explain. The scaly-winged insects (*Lepidoptera*) are divided into butterflies and moths. The larvæ or caterpillar hatched from the egg, is a great feeder; when it is full grown it forms a pupa, or chrysalis, keeps quiet for a time, and then comes out a perfect winged insect. If the winged insect has slender feelers with a (woolly) knob on the end, and rests with all its wings erect, it is a butterfly, and if it rests with two or all of its wings spread out, it is a moth, and these usually fly at night. They vary in size, from very minute to large insects with 6 to even 9 inches spread of wing. Some moths are called millers, and some people give the name miller to all moths that are not showy. It will be seen that the name moth has a wide application. It speaking of the clothes moth, it has become to be called simply moth. It is its caterpillar which, feeding upon clothing, does the mischief. It eats the wool of the cloth, and at the same time uses some of it to build the case, which it starts soon after it is hatched from the egg, and enlarges it, as in growing it needs more room. This case, which is open at both ends, the caterpillar lines with a very soft web, and it is carried about with it wherever it goes in search of food. It is this caterpillar then, which is generally called the moth. The caterpillar is is about half an inch long, and about the size of a darning needle, white, with a horn-colored head, and has sixteen feet. When full grown, it changes to a chrysalis, and at length comes out as the perfect insect, or moth proper, and which is often called the moth-miller. This is a very delicate little insect, with a spread of wings of only about half an inch, of a buff color, shining like silk, and flits about very quietly in search of a place to lay eggs, that will breed moths and mischief. So far as our clothes are concerned, the large "millers" do no harm. The moths make their appearance in spring, usually in May, and as several broods are produced during the season, there is danger from them until cold weather comes. Those that are then in their little cases in the clothing, remain dormant all winter, and come out as moths the next spring; this answers our correspondent's 2nd and 3d questions. As to preserving articles from moths; if the woolens are free from the insects in the egg or caterpillar form when put away, and are kept all summer in a case or package which is so thoroughly tight that the parent moth can not get in to lay her eggs, or if eggs should be laid on the outside, there is no crack or pin-hole large enough for the tiny caterpillar to get through, then the clothing will be perfectly safe. Bags of paper, quite free from holes, will keep the articles, or they may be rolled up in successive papers, each one being carefully pasted down. A tight box, with every joint and crack made doubly sure by pasting strips of paper over them, is used by some. Others use an empty liquor barrel; the articles being packed in this, it is headed up tightly. If the receptable, whatever it may be, is properly tight, no camphor or other aromatics are needed; these articles are disagreeable to the parent moth, and keep her away, and some of them will kill the young caterpillar. Camphor, benzine, carbolic acid, and other strong-smelling things, and various secret preparations are used.

BOYS & GIRLS' COLUMNS.

The Doctor's Correspondence.

No doubt that some of my young friends are wondering when their turn will come for an answer. I can not always take the letters in order. Sometimes I must wait until an engraving can be made, and sometimes a youngster will ask about something that requires more investigation than I can give it at the time, and it must wait. Those boys and girls who send me arithmetical and other puzzles, must not expect an answer. I some time ago stated that everything relating to puzzles should go to Aunt Sue, and though I try to send to her such as come to me, it is better for you to send to her at once....E. Martin, New Jersey.—There is "a little bird with a sweet song, called the Peabody-bird," this being the name frequently given to the not very uncommon

WHITE-THROATED SPARROW.

Here is an engraving of it, which will allow you to see whether it is the bird you know or not. It is from 6½ to 7½ inches long; the general colors dusky—black, brownish, and ash-color, being variously combined; the most striking mark is a pure white throat, while the breast is ash-colored; the head is black, with a white line through the middle at the top, and another over each eye. It appears in spring, in the Northern States in April, but in Maryland and Virginia many of them remain all winter, though the most go farther south. It breeds in the northernmost parts of the country, and probably in Canada. Their nest is built upon the ground, among the moss and leaves beneath trees and bushes. They stay about the Middle States until May, when they go to their breeding places, and return in great numbers in October, on their way south. They have a clear, sweet song, which has been likened to *pee-a-body*, *a-body*, *a-body*, *a-body*, repeated with various trills and variations, hence it is often called the "Peabody-bird," just as another of our birds is called "Phebe," from its peculiar note....Several grown persons have asked, and now a little Miss in Cook Co., Ill., wishes to know about the

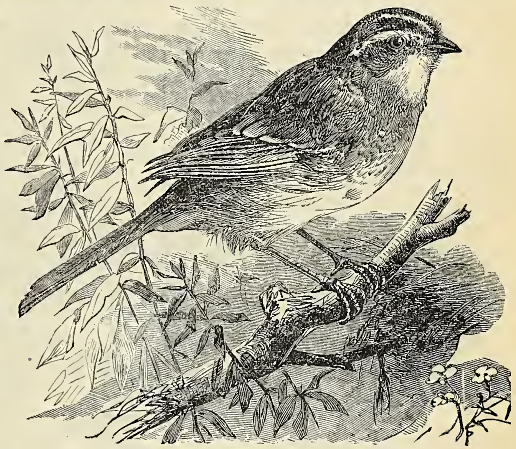


Fig. 1.—THE WHITE-THROATED SPARROW.

SO-CALLED RESURRECTION PLANTS.

These plants turn up every once in a while, sometimes a street vender offers them, then they are advertised by some dealer, and of course the Centennial was sure to bring them around again. Indeed, besides the more common plant from California, some of those Frenchmen and Germans who wore Oriental costumes, sold at the Centennial the very oldest plant of this kind, all the way from Palestine, or some part of the East. A great many of both kinds were sold to those who wished to take home for themselves or their friends, some little memento of the great exhibition, and these, unlike many of the "relics" and other things sold, were genuine, as it is impossible to imitate them. One lady, who had received a plant of each kind, which a friend had brought her from the Centennial, was evidently much pleased with them, and she wrote me to know what kind of soil they needed, and "how to treat them." I was very sorry to tell the good lady last month that all the "treating" they needed was to keep them where it was most convenient, as they were "as dead as a door-nail"—yes, several door-nails.

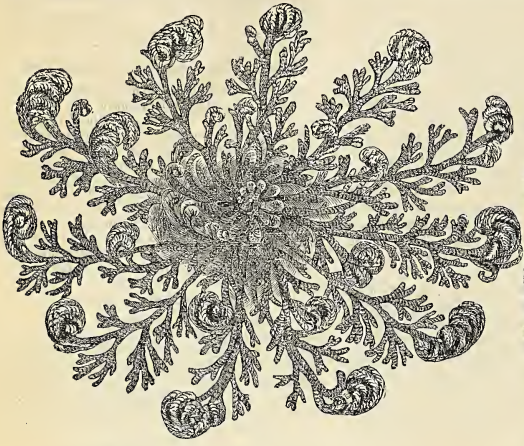


Fig. 2.—OPEN CALIFORNIA RESURRECTION PLANT.

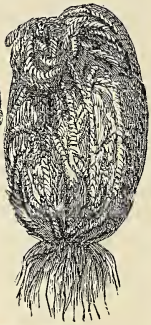


Fig. 3.—CLOSED.

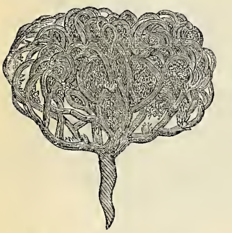


Fig. 4.—ROSE OF JERICHO.

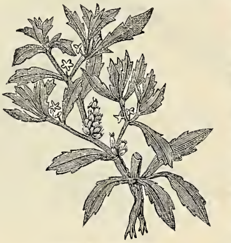


Fig. 5.—BRANCH.

The California "Resurrection Plant" is the most common, and is the one about which we have been most frequently written. This is a plant belonging to the family of Club-mosses, and is related to the ferns. It grows in Southern California, Northern Mexico, and other parts of the continent where rain only comes for a short time in winter, and all the rest of the year everything is dry, burnt, and barren. This grows in the cracks of rocks, where it gets very little moisture by its roots, and for most of the year it is curled up in the smallest possible space, as seen in the right-hand engraving, (fig. 3); but when the rainy season comes, the plant wakes up, spreads its branches, which are covered with dark-green scales, which answer for leaves, and forms a beautiful rosette, as in the engraving (figure 2) at the left hand. The plant makes all its growth in the few weeks during which the moist weather lasts, forming more branches in the center, and when the rains cease, and dry weather comes again, it gradually curls itself up for another long nap. Sometimes in those countries the rainy season forgets to come at all, when this, and other plants, have a very hard time of it. These plants, even when dead, will open when placed in water, and spread their branches just as if they were alive. I have some that I collected over 25 years ago, (Oh! how short it now seems), and they will spread out, when wetted, as well as ever, and I am sure that they must be *very* dead indeed. You will wonder why they act as if alive. You will recollect that only last December I told you about the "Animated Oats," and how the long bristles upon them twisted and untwisted in a most life-like manner. Various vegetable and animal substances are affected in a similar way by moisture; hair that curls in dry weather, will be straight in a long, wet storm, and wood shavings that curl when dry, lie flat when soaked. It is a merely mechanical effect, and the branches of the plant are made limber by the moisture just as shavings are. The Oriental "Resurrection Plant" is more rarely seen in this country than the other. When I was a youngster, people rarely went to Europe even, but a man who had been to the "Holy Land" was looked upon as one who had done great things, but there were no ocean steamers then. Among the curiosities these travelers brought home, there was quite sure to be a

"ROSE OF JERICHO,"

and that, like our later California plant, would spread its branches when placed in water, and roll itself into a ball when dry. It was looked upon as a wonderful plant; the monks called it *Kaf Maryam*, or Mary's flower, and said that it would open each year on the day and the hour of the birth of Christ, and other equally strange stories were told about it. The engraving (fig. 4) shows you the plant dried, as it is sold, and at its side (fig. 5) is a branch of the fresh plant as it looks when growing. The plant spreads its leafy branches all around from a central root; it produces its little flowers in the spring, and ripens its seeds. When the dry season comes, the leaves drop, the dry branches with the seed-pods on them roll up to form a ball, and when there are heavy storms of wind, the root breaks away, and the ball goes rolling on before the wind, and may travel for many miles before it finds a resting place. It may be stopped by a stone or a clod, or fall into a little hollow, and there it waits until the spring rains come. When moistened, the dry sticks of stems spread out, the dry seed-pods open, so that the seeds can fall out and grow. So, after all, it is only one of the many ways in which seeds are scattered to a great distance. The branches will curl up or spread open as often as they are dried and wet, but they have no more life in them than any other old twig. The real thing perhaps is half as large again as it is shown in the engraving ...Since the above was written, I received a letter from some one in Brooklyn, N. Y., who does not agree with the statement that these plants have no life, as he has one that will open and show, not only green leaves, but white flowers. All I can say is, that he has something very different from anything I have seen or heard of, and should be very glad indeed to see it.

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Aunt Sue's Puzzle-Box.

Well, children, you would laugh if you could read a letter I received to-day, asking me to explain to *grown folks* how to find out puzzles;—to explain what they mean, and how to go to work to get at the pith of them. It is rather trying to tell a good joke, and then have to dissect it for the hearers, so that they may know where the laugh comes in. However, I like to please everybody (it's so easy!); therefore I'll "explain," and you veteran-puzzlers of ten and eleven summers (not to mention winters) can be solving the puzzles, while the learners are studying the explanation.

We will begin with the numerical enigma. (Get your slates.) I am composed of 17 letters: (Write down the figures in a straight line one-quarter of an inch apart—1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17.)

My 5, 2, 12, 4, is what children love to read.

(Oh! that must be "book":—yes, it has four letters; well—put b down under 5; o under 2; o under 12; and k under 4.)

My 7, 3, 9, 4, is something you are sure to see on the table at dinner time.

("Salt? It has four letters."—"No, the last letter of it is k."—"O! 'fork.'"—"Yes, of course."—Write the letters of "fork" under the figures named.)

My 6, 15, 1, is a fish.

(Three letters—"cod," perhaps; have we got any letters under 6, 15, or 1?—"No."—Well, we'll skip that. What numbers have we the letters for?"—"5, 2, 12, 4, 7, 3, and 9."—"Well, here's an item with 7 in it; let's try that.")

My 7, 8, 13, 9, is a number.

("That begins with f, and has four letters, it must be either number four or five; let us try 'five.'—"Oh! no, the last letter is r; it must be 'four.' Write it down under the figures."—"Now can you make out the whole sentence from the few letters you have already written?"—"No, not quite, it begins with 'book,' 'hook,' 'took,' or something ending in double o, k.")

My 17, 14, 16, 11, is what children love to do.

("Dance?"—"No, only four letters."—"O! I know! 'play.'"—Write it down.)

(When you have reached thus far, you will have no difficulty in reading the whole sentence; but in making an enigma, all the letters must be used, so you might as well go on and write them down.)

My 10, 11, 6, is something without which no beauty could be seen.

My whole is a well-known proverb.

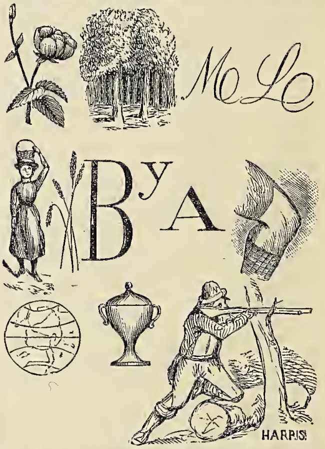
(I leave the learner to finish the enigma and find the solution.)

And now, just for fun, let us have

A PRIZE ENIGMA!

I offer ten prizes—of articles *costing less than a hundred dollars apiece*—(say a book, a pair of scissors, a knife, or some little useful present, just for the name of the thing)—to be distributed among those of my nephews and nieces, who shall send to me—subject to the conditions under-mentioned—correct solutions of the "Prize Enigma" below.

The conditions are: 1st. All answers must reach me on or before the last day of April.—2nd. Answers must be signed with the name and post-office address of the sender, and be enclosed in a sealed envelope, superscribed "Answer to Prize Enigma," which must be put in another envelope and addressed and mailed to "Aunt Sue, Box 111, P. O., Brooklyn, N. Y."



No. 459. Illustrated Rebus.—A quotation from Shakespeare, not as he wrote it, but as people generally quote it, and it is used quite often.

On the 1st day of May, I will place all the answers received in a box and shake them up well. Then I shall invoke the aid of a very charming young lady, Miss Clara Josephine, of the mature age of eighteen months, who shall preside over the box, open it, and hand me the answers one at a time; no one will charge her with favor or prejudice.

I will open and examine each answer in the order of her selection, and to the first ten correct answers will accord the prizes, one of which will be mailed to each winning address. The result will be publicly announced in the July number.

Now, dear children, every one,
Try your skill, and share "the fun."

Here it is:—

PRIZE ENIGMA.

I am composed of 52 letters:
My 31, 43, 6, 28, 20, 25, 4, 29; is a fop.
My 24, 41, 9, 39, 20, 5, 49, 36, 3, means—fitness.
My 48, 11, 1. 45, 51, 34—chief.
My 2, 18, 27, is a pacificator.
My 22, 37, 17—distance.
My 32, 16, 42, 20, 52, 44, 2—adroitness.
My 26, 14, 35, 51—to soil.
My 50, 12, 47, 38, 21, 10, 8, is a musical instrument.
My 26, 40, 23, 33, 34, 30, is an animal.
My 46, 19, 23, 6, 52, is a carniverous animal.
My 13, 7, 15, 20, is squirrel-fur.
My whole is very excellent advice.

(In defining most of the items of the enigma, I have chosen one word from the definitions given to the item in Worcester's Unabridged Dictionary. They are all fair words, except perhaps the "fop," and I should have thought his title somewhat *slangy*, but that Worcester gives the name in good faith without any "*local*" or "*obsolete*" wherewith to qualify it.)

I have made the enigma comparatively easy by using the figures 51, 27, 26, 34, 23, and 6, more than once, and figure 20 several times.

And now I will give you an easy enigma to practise upon, not for a prize, but for the fun of doing it.

SIMPLE ENIGMA.

I am composed of 20 letters:
My 8, 18, 13, 14, is a period of time.
My 14, 13, 2, 10, is a kind of wreck.
My 3, 12, 15, 17, 4, you could not sing without.
My 3, 20, 9, 1, is worn by the ladies.
My 5, 8. 6, 7, 20, is what snow is when it first falls; but it does not remain so, long, in New York.
My 2, 17, 20, furnishes amusement in winter and refreshment in summer.
My 18, 16, 4, is a number.
My 19, 11, is a possessive pronoun.
Try and accomplish my whole.

◆

ANSWERS TO PUZZLES IN THE FEBRUARY NUMBER.

RHYMES.—1. Fair. 2. Hair. 3. Ware. 4. Bear. 5. Pair. 6. Rare. 7. Mare. 8. Scare. 9. Stair. 10. Tear. 11. Lair. 12. Pear. 13. Fare. 14. Dare. 15. Care. 16. Spare.

ALPHABETICAL ARITHMETIC. — 307)652894(2126. *Key* — "Burnt child."

PI.—Humanity is the peculiar characteristic of great minds.

CHARADE.—Nightingale.

NUMERICAL ENIGMA.—Nation shall not lift up sword against nation; neither shall they learn war any more.

ANAGRAMS,—1. Babyhood. 2. Sufferer. 3. Landscape. 4. American. 5. Pleasure. 6. Mistake. 7. Annoyances. 8. Uniforms. 9. Thoroughfare. 10. Misunderstand.

POSITIVES AND COMPARATIVES.—1. Weight, waiter. 2. Cent, centre. 3. Pond, ponder. 4. Gnu, newer. 5. Sleigh, slayer. 6. Scow, scour.

CONCEALED SQUARE WORD.

R I N G
I D E A
N E A T
G A T E

CROSS WORD.—Diamond.

Thanks for puzzles, letters, etc., to Howard S. (although puzzles upon the names of the writers, or on those of their personal friends, are not acceptable). Louie (I have nothing to do with the business affairs of the *American Agriculturist*, but I see that they offer to send any back number for the price named), Pontiac, Melville and Jim, Belle, Ma, M. L. E., and Annie.

Several contributions have gone to that bourne whence no puzzles return, because they were sent to 245 Broadway, instead of being addressed to "Aunt Sue, Box 111, P. O., Brooklyn, N. Y." I warn you, children, that you may "never see your darlings any more," if you send them to the office of the *American Agriculturist*. They are too busy over there to attend to such small things as puzzles. The Doctor gets pretty nearly all the pointers (☞) that the printer has wherewith to point at my address, and then scolds because you don't seem to notice it.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Bird-Houses that any Boy can Make.

We are glad that a number of young people write us about bird-houses, not only because it shows a love for birds and a wish to have them about the house, but because they are at the same time doing good to themselves and their neighbors, by increasing the number of insect-eaters. We have, in former years, given a number of engravings of bird-houses of various kinds, some very simple and others ornamental. It is a mistake to have the bird-houses too showy and too much exposed. Most birds naturally choose a retired place for their nest, and slip into it quietly, so that no enemy can find out where they live. All that is needed in a bird-house is, a hiding place, with an opening just large enough for the bird, and a water-tight roof, and there are so many ways in which these may be provided, that any boy can contrive to make all the bird-houses that may be needed. A correspondent once wrote us that he had seen an old hat, with a hole for a door, tacked by the rim against a shed, as in figure 1, and occupied by birds sooner than a showy bird-house. Several years ago a friend told us that an old tin oil-feeder (such as is used in filling lamps), which had been hung upon a fence picket, had been occupied by birds, who reared a brood in it. European sparrows and martins do not seem to care how much they are exposed, or how many neighbors they have, hence large bird-houses upon poles, with several tenements in them, will answer for these, while others prefer a more retired place. Gourd shells, fruit-cans, and boxes of various kinds, may be securely fastened in the trees and at other places near the house, where they will soon be found by the birds. The neat little kegs in which oysters are sent to inland cities, are capital ready made bird-houses, needing only to be washed out, and placed so that the opening in one head will answer for the door. Figure 2 shows how six of these kegs may be put together to go upon a pole. The kegs are fastened to the boards by screws put in from beneath. Figure 3 shows how a two-storied house may be made from two shallow boxes, each divided inside into four tenements; each box has a bottom board, projecting two inches all around, to answer as a landing place; the roof should be tight, and the whole so strongly nailed that it will not warp, and it should be painted. The remaining engravings show how small boxes, of different kinds, such as may be found at any store, may be turned into bird-boxes. These are much better to be fastened to sheds and out-buildings and to the branches and trunks of trees, than to stand out upon poles. In figure 4, the covering is of thin strips of chestnut or other easy splitting wood; figure 5 is covered with the bark of the Paper or Canoe Birch, which is not rare in northern woods, and ornamented with Laurel or other crooked twigs. In the absence of Birch, any other bark will answer, no matter how rough, as seen in figure 6. In putting up bird-houses, keep two things in mind: place them where cats cannot catch the birds as they pass in and out, and be sure to fasten them so securely that no wind, or shaking of the trees will throw them down, and thus break up the family.

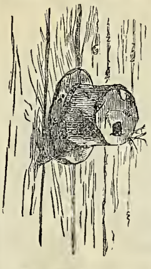


Fig. 1.—OLD HAT.

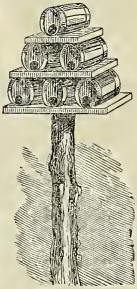


Fig. 2.—KEG HOUSE.

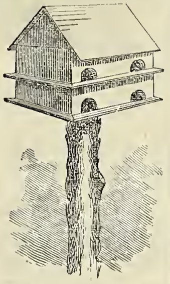


Fig. 3.—LARGE HOUSE.

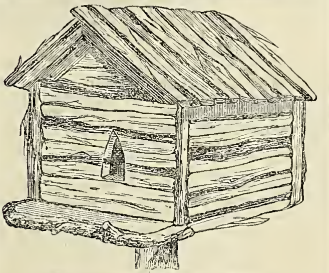


Fig. 4.—HOUSE OF SPLIT STICKS.

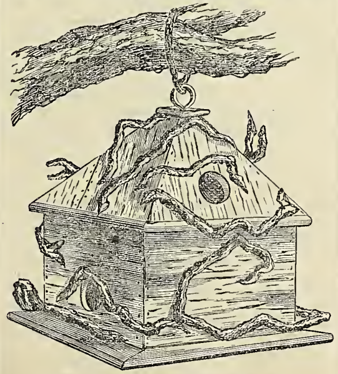


Fig. 5.—HOUSE WITH BIRCH BARK.

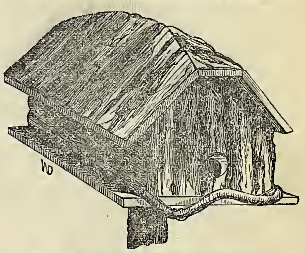


Fig. 6.—HOUSE WITH ROUGH BARK.

◆

Aunt Sue's Chats.

J. M. BLAUVELT sends a sum, which, he says, "was given at a Teacher's Institute in our county some years ago by a School Commissioner, and out of fourteen pupils only two worked it alike." When I first glanced at it, I thought it was as "plain as a pike-staff," and tried it myself, but I became terribly "mixed" in the debit and credit account. It has furnished much amusement in our own family-circle, and I give it to the readers of the *American Agriculturist* with much pleasure. Here it is: A liquor-agent of a New England town (where spirits were only sold by an agent appointed for the purpose) held the office for one year; at the expiration of that time he gave the following statement of his account, viz.;

Amount of cash received on assuming office… ..	$ 32.17
Value of liquor received at same time……. ….	57.54
Cash received from sales during the year……….	102.97
Amount paid for liquor during the year………..	59.91
Amount of agent's salary………………………	25.00
Value of liquor on hand at the end of the year….	31.37

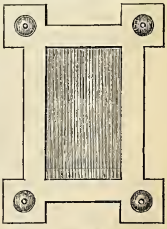
Does the town owe the agent, or the agent owe the town? And how much?

I shall be glad to receive solutions to the above from *everybody*.

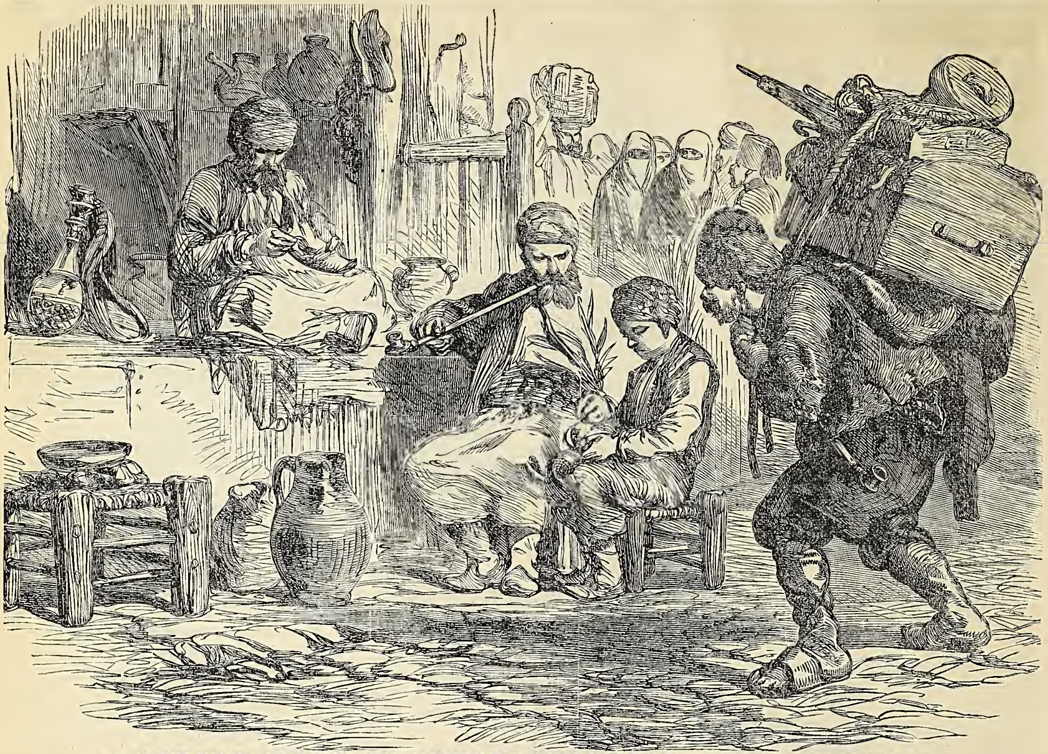
S. (Peel Co., Canada).—Thanks for puzzles, etc. We leave a vulnerable point in the alphabetical arithmetic, purposely; it would scarcely pay to waste time upon it else. I shall look for your solution to the "liquor account."

HORACE M.E.—Your questions were a little too scientific for my department, so I turned them over to the DOCTOR.

FLORENCE.—I can scarcely give you any suggestions for home-made frames large enough for the pictures you describe; still, if I wanted to make some cheap ones, I should contrive something or other. Let's talk it over. How would it do to cut a frame out of card-board, like figure 1. (Sew a button-mould on each corner), brush it over with a coat of glue, and, while damp with the glue, scatter sand over it? Then fasten it to four pieces of lath at the back (cut to fit the picture, and joined at the corners) by a brass-headed nail, driven through the button-mould at each corner. If you do not like the sand, scatter raw-rice and mustard-seed over the glue, and when perfectly dry, give it one or two coats of red sealing-wax varnish (made by dissolving red sealing-wax in alcohol; or shellac in alcohol, and adding vermilion to color it). Or cover the card-board with brown paper (or stain it brown), and fasten on to it pressed leaves, acorns,



FRAME.



A STREET-SCENE IN CONSTANTINOPLE.—*Engraved for the American Agriculturist.*

etc. The chief objection to the latter plan is, the tendency to collect and harbor dust. For small pictures, frames made of the splints (lamp-lighters) that are sold in bundles, are very pretty, but they are so commonly used that I need not describe them here. A wreath of Christmas greens makes a very pretty frame for a picture, and lasts much longer than one would suppose, if not much handled.

ENGLISH GIRL.—I cannot tell you "where in London" the newspaper is published; but it is called "The Obituary," and is devoted to the affairs of grave-diggers, embalmers, undertakers, sculptors of tombstones and monuments, cremationists, etc. Wills are published therein, heirs hunted up, lost wills advertised, and epitaphs furnished. Mourning goods are advertised. In short, everything of a funereal nature that can be published, there finds place. It is not a cheerful paper.

J. J.—Jacobus Damiun, whoever he might be, was eight feet high; Walter Parsons, seven feet four, and William Evans seven feet six. The scripture giant, Goliath, was six cubits and a span high (1. Samuel, xvii:4); variously estimated to be from nine feet six, to twelve feet. Og is supposed to have been even taller, from the fact that his bedstead is mentioned in Deut. iii:11, as being "nine cubits long." Sabara, the Arabian giant, was nine feet nine inches high. The Emperor Maximus was eight feet six inches high. During the reign of Vitellius there lived a Jew who was ten feet two inches tall. He was named Eleazera, and was sent as a present to Rome with Darius, when the latter was sent as a hostage. During the reign of Augustus Cæsar we read of two giants, Idusio and Secundilla, who were each ten feet high, and after their death their bodies were kept for some time as a wonder. So that "giants" were not "common" even in those days.

How Things are Done in other Countries—Streets and Street Life.

A stranger visiting any large city learns much about the place and its people by walking through the streets. The business streets show him a great deal of one side of city life, and a walk among the residences allows him to see where and how the people live. New York is unlike most other American cities in having one principal street, and all others are very poor when compared with it. Broadway is a large and important part of New York; it is not only the great street of the city, but the great street of the country, if not of the world. No other city has a street that shows such variety, such life, and such crowds for miles in extent. This street is a great sight, and though we have been familiar with it for some 40 years, it is just as attractive as ever. In all the principal cities of the United States and Northern Europe, the streets are broad, with a carriage way between two side-walks, and kept in excellent order. But when we visit the cities of Mexico and other Spanish American countries on this continent, or the cities of Southern Europe and Asia, the first thing that strikes us is the beauty of these cities when seen from a distance. The houses, usually white and low, seem to be embowered in trees, above which appear spires, domes, or minarets, glistening in the sun, and forming a charming picture—but enter the city—and the beauty disappears. The most repulsive sights meet the eye, and one is apt to wish that he had no sense of smell, so offensive are the odors. Take a large Mexican city, for example, like Chihuahua or Durango, both so beautiful when seen from without; when you enter the streets it seems like going into an immense prison. The houses are generally built to enclose a square court-yard, and all the doors and windows open into this yard, while the houses present to the streets only a blank wall; no windows on the street, and only one enormous door, through which a carriage or large wagon may be driven. All the life is found, and nearly all the business, is carried on within the court-yard, and the streets are deserted save as people pass from one house to another. In that country every house is really a castle, for when the big doors are closed, all the rest of the world is shut out. In some of the large Eastern cities the streets are strangely narrow. In Constantinople and Cairo, as well as in Canton, and other large cities in China, the streets are so very narrow, sometimes only 6 or 8 feet wide, they have no side-walks, but slope towards the center, and in the middle of the street is a gutter to carry off the water, which you may be sure is none of the cleanest. Of course in such streets as these there can be no carriages drawn by horses. In Cairo, where camels are in common use, a train of loaded camels makes queer work in the streets. Of course they have their loads packed on their backs, and when loads are light they are very bulky. It is very funny to see the people, when the shout of the camel-driver is heard, get close up to the houses, take shelter in the door-ways, or wherever they can squeeze themselves out of the way, and not be hit by the loads.

One of the strange things about these Eastern cities is the amount of business done in the streets. You have of course heard of the Bazars of Constantinople and other places, but these are only narrow streets, roofed over and lighted from above; the stores are very small, we should call them "stands." Indeed, many an old apple or candy woman in our cities has more room to display her wares, than do those dealers in costly shawls, jewels, and other articles. Even in the streets that are not covered and turned into bazars, the store is merely a sort of stall, or coop, where the dealer can attend to his principal business—which is smoking—and who looks as if he did not care to be disturbed by a customer. The picture gives a part of one of the commoner streets of Constantinople, which serves to show some of the things that strike a stranger. The shoe-maker, like most of the tradesmen in that city, carries on his business about as much out of doors as in-doors, and people make themselves quite at home in the street. The porter, with his load, is a common sight in Eastern cities, where merchandise and baggage of all kinds is mostly carried by main strength. You wonder why the fellow don't get up a barrow or hand-cart of some kind. That is just what an American would do, but this man's father, and grandfather, 'toted' things in the same way, and so he keeps on, as will his children, no doubt. You will wonder if those people in the distance have the toothache, and are going in procession to the dentist's. They are women who are very likely out on a shopping tour. It is the custom, indeed, a part of their religion, for the women to wear in public very thick veils, that allow only the eyes to be seen. One of the advantages of travel is that one learns to better value what he has at home. Many a boy and girl, when they have read of Oriental magnificence, of bazars, of mosques, and other fine things, have thought their own surroundings poor and mean. One of the uses of travel is to make us content with our own homes. If any of you could visit these oriental cities, with their narrow, dirty, and bad-smelling streets, you would at once think of home, and of our own towns which, if not ancient or magnificent, are at least clean and healthful.

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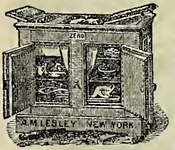
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No extra charge is made, except for private lessons in art studies; for which the additional charges are as follows, payable three quarters in advance:

Pianoforte, two lessons a week and one practice period daily................	$100	per annum.
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Solo Singing, two lessons a week and one practice period daily............	100	"
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A nominal charge is made for medical attendance.

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The entrance examinations for the year 1877–78 commence on Wednesday, September 19, 1877, and continue three days, from 9 a. m. until 5 p. m., with an intermission of one hour and a half for dinner.

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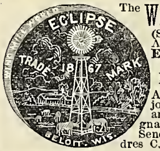
Letters respecting departments of instruction, admission or dismission of students, etc., should be addressed to the President; Letters respecting Finances to Matthew Vassar, Jr., Treasurer; other business letters to William F. Forby, General Superintendent.

☞ CATALOGUES containing full particulars may be obtained by addressing WILLARD L. DEAN, Registrar, Poughkeepsie, N. Y.



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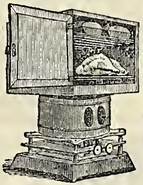
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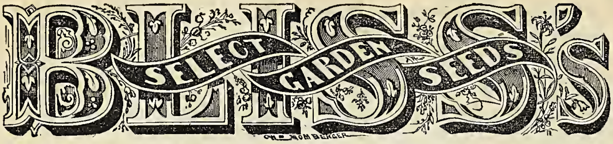
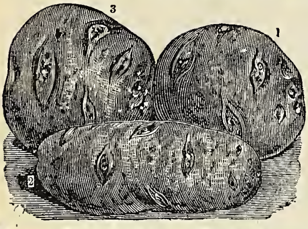
THOSE wanting choice fowls and excellent layers, will do well to get a setting of Pure Brown Leghorns, (13), from H. P. HUBBARD, New Haven, Ct.





New Varieties Potatoes.

No. 1.—CENTENNIAL.

A seedling of the well-known Brownell's Beauty, crossed with the White Peach Blow. Shape, round, symmetrical, very handsome; skin, deep red; flesh, white, fine grain, of superior quality; medium early.

No. 2.—SUPERIOR.

Of the same parentage as the preceding. Tubers, oval, kidney-shaped; skin, very smooth, of a deep red color; eyes few and small; medium early; very productive, an excellent keeper—and retains its mealiness and fine table quality during the entire season.

A Certificate of Merit was awarded this variety at the late International Potato Show in England.

No. 3. IMPROVED PEACHBLOW.

A cross between the well-known Jersey Peach Blow and the Excelsior, resembling the Peach Blow in appearance. In quality and earliness it far excels that variety, and will produce double the quantity.

Either of the above varieties will be mailed, post-paid, per lb., $1.00; 3 lbs. to one address, $2.50.

RUBY.

The most Productive Potato known.

33 Bushels grown from one pound.

A new red, kidney-shaped potato, from the Early Rose, hybridized with the White Peach Blow. The shape is oblong, slightly flattened, resembling that of the Early Rose. Eyes slightly sunken; flesh white, fine-grained, firm, and of excellent flavor. Tubers of medium size. The time of maturity is the same as that of the Early Rose, and it is equally productive.

Per pound 75 cts., 3 lbs. to one address, $2.00 by mail, post-paid. By express, charges paid by purchaser, 1 peck $2.00; half bushel, $3.00; 1 bushel $5.00; 1 bbl. $12.00.

SNOWFLAKE.

23½ Bushels grown from one pound.

Beautiful in appearance — superior in quality — early—ripening a few days later than the Early Rose—very productive. Price: Per pound, 60 cents; 2 pounds to one address, $1.00, by mail, prepaid. By express or freight, 1 peck, $1.50; ½ bush., $2.50; 1 bush., $4; 1 barrel, $8.

For a full description of the above, with many other desirable varieties, see our Potato Catalogue.

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500 Named Varieties Potatoes.

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One Tuber each of the entire collection, correctly labeled, and carefully packed, express or postage prepaid: 500 varieties, $100; 250 varieties, $50; 100 varieties, $25; 50 varieties, $15; 25 varieties, $8.

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(*Dioscorea Batatas.*)

A valuable esculent but little known. A well-grown root will measure 2 feet in length, and 2½ inches in its broadest diameter, and are quite hardy, remaining in the ground over winter without protection. The flesh is remarkably white, and very mucilaginous in its crude state. They may be boiled or roasted, and when cooked possess a rice-like taste; are quite farinaceous, nutritive, and valuable for food. It is also a very desirable climbing plant, suitable for covering screens, arbors, and unsightly places. Packets containing 12 bulblets, 25 cts.; 5 packets $1.

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LITTLE GEM.

This new variety was raised by the originator of the Conqueror Tomato, heretofore considered the earliest in cultivation. The vines are of medium length, compact growth, and excessively loaded with bright red fruit of medium size, of round and uniform shape, varying from four to six inches in circumference, of superior flavor, either raw or cooked. Its bright glossy red color, uniform size, shape, and otherwise beautiful appearance, make a dish of LITTLE GEMS almost as tempting as a plate of strawberries. It may be relied upon to yield several pickings, a week or ten days earlier than any other variety.

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This superior variety is the result of a careful selection for successive years, of the best formed, largest, and deepest colored roots in the Imported Long Orange Carrot, by which it has attained a perfection hitherto unknown in this useful vegetable, being larger, better flavored, and of a deeper orange color, and more sure to produce a crop. Butter makers will find this variety very useful in giving to their butter a rich, deep yellow color. We unhesitatingly pronounce it the best variety in the market, and one which will not fail to give satisfaction to the purchaser. One ounce, 15 cts.; four ounces, 40 cts.; one lb., $1.25; 5 lbs., $5.00; by mail, post-paid.

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Our stock of onion seed has been raised from carefully selected bulbs, and we can recommend it with the greatest confidence, as equal to any ever offered in this or any other market.—The abundant crop enables us to offer it at a lower price than for many years.—Sent post-paid, as follows:

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Extra Early Red	$0.25	$0.75	$2.00
Early Red	15	50	1.50
Wethersfield Large Red	15	40	1.25
Danvers Yellow	15	50	1.50
Yellow Dutch	15	50	1.50
White Portugal	20	60	2.00
Early Cracker	20	75	2.50
Early Red Globe	20	75	2.50
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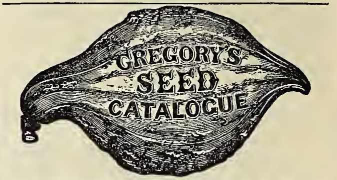

My Annual Catalogue of Vegetable and Flower Seed for 1877 will be ready by January, and sent **free** to all who apply; Customers of last season need not write for it. I offer one of the largest collections of vegetable seed ever sent out by any seed-house in America, a large portion of which were grown on my six seed farms. **Printed directions for cultivation on every parcel.** All seed sold from my establishment warranted to be both fresh and true to name; so far that should it prove otherwise, I will refill the order gratis. As the original introducer of the Hubbard and Marblehead Squashes, the Marblehead Cabbages, and a score of other new vegetables, I invite the patronage of **all who are anxious to have their seed fresh, true, and of the very best strain. NEW VEGETABLES A SPECIALTY.**

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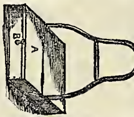

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"*A Rose of golden-yellow, striped and flaked with scarlet or vermilion sounds like a dream or a fairy tale; it is, nevertheless, a reality.*"—H. CURTIS, *in* THE GARDEN.
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Descriptive circular and price-list free.
In raising small fruits, many fail or succeed but partially, for the lack of a little *practical knowledge and advice.*
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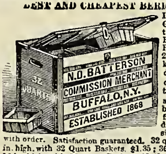

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 129.

Guenon's Theory of Milk Mirrors or Escutcheons.—"W.," Holyoke, Mass. We would hardly be guided by the escutcheon alone in selecting a cow; if, with a good escutcheon, the cow had all the other points of a good cow, that would be corroborative: but in the absence of these, the escutcheon might go for very little.

Information about Missouri.—"J. H. C. S.," Hartford, Ct. In the Missouri Agricultural Report for 1871, there are descriptions of all the counties in the State. The report may doubtless be procured of J. F. Wielandy, Esq., Secretary of State Board of Agriculture, Jefferson City, Mo. Enclose 25 cents for postage.

Effect of a Southern Slope on Land.—"G. E. L.," Hopkinton, N. H. Land that slopes to the south retains its fertility quite as long as land sloping to the north. The slope makes no difference in this respect. But the exposure does make a difference, as the crop on a southern slope is very often injured by the warmth of the sun in winter or early in spring, while the northern sloping ground remains frozen and escapes injury.

The Cow that was Killed by a Piece of Wire.—"N. B. F.," St. Louis, Mo. The cow referred to, as having been killed by a piece of wire that penetrated her stomach, was, we believe, (writing from memory only), one of the herd that was sold by Col. Morris to a firm of Western breeders, Messrs Avery & Murphy. Any person who is very anxious to ascertain the particulars, might perhaps procure the information from Col. Morris, of Morrisania, N. Y.

Spaying.—"A Subscriber," Jefferson, N. Y. It is impossible to give in writing sufficiently direct instructions for spaying a cow or a sow. It would be best to learn the operation from some one who understands it.

Clotted Milk.—"Reader," N. Brookfield, Mass. When only a small portion of the milk of a cow is clotted, and there is no heat or fever in the udder, it is no serious objection to her. Care should be taken to milk out the clots very thoroughly, and if this can not be done, some solution of carbonate of soda (a tablespoonful in a cupful of water) may be injected into the teat, and soon after milked out. Her milk is too acid. Give the cow a handful of salt daily.

Work of Steam-Engines.—"E. C.," Welland, Ont. A 6-horse-power engine will do twice the work of 6 horses, and is far cheaper than horses. It is so much cheaper that it would pay to have an engine wherever 1,000 bushels of grain have to be thrashed.

How to Preserve Eggs.—"M. R.," Morrisania, N. Y. Eggs can not be preserved in salt any better than in moist sand closely packed about them. It is only the protection from the air that saves them. The best method probably is, to smear them thoroughly, twice, with linseed oil, and then they may be packed in sand, salt, wheat-bran, or any other material that will maintain an even temperature.

Coloring Butter.—To give an agreeable color to butter, by means of unobjectionable artificial coloring matter, is perfectly legitimate, and as light-colored winter-butter sells lower than colored, the dairyman is justified in using a proper coloring. Annotto, a harmless vegetable pulp, is the basis of the best coloring, and a preparation of this, known as the "Perfected Butter Color," is made by Messrs. Wells, Richardson & Co., of Burlington, Vt. We have recently tried this coloring, and find that it gives a clear, rich color to the butter, that it is free from sediment, and has no taste or odor. It is certainly greatly preferable to carrot juice for the purpose.

Sugar Beets and Beet Sugar.—Some interest is again excited in regard to the culture of beets, and the manufacture of beet sugar. This excitement is periodical, and leads to many inquiries. In reply to many of such now before us, we give it as our opinion that the manufacture of beet sugar does not promise to become profitable in the United States. There is no sugar factory, now operated with profit, and we believe the only one run has suspended work. The cane-sugar manufacture, though free from the costly processes and other difficulties, connected with that of beet sugar, merely languishes, and does not thrive in competion with Cuban sugar. If we can not make cane sugar profitably, we can hardly produce beet sugar, which requires to be made on a large scale, with very expensive machinery, while the former does not. In Europe, the sugar factories use the pulp of the beets to feed cattle, and thus utilize the refuse with the greatest economy. For fodder the beet is valuable. The White Silesian sugar beet, or Lane's Improved Imperial beet are the best varieties for this purpose. These are worth twice as much as turnips or rutabagas. The beet contains most sugar when earthed up. and grown of small size, or about 2 to 4 lbs. each. Any drill that will sow turnip seed can be made to sow beets. The roots need not be earthed up when grown for stock, but are grown on the flat, or rather on slightly rounded ridges. A charge of $2 per acre for the use of a seed-drill is an exorbitant one.

Counterfeit Butter.—From its first appearance we have strongly objected to the counterfeit butter and cream made from fat; oleo-margarine is its name, and tallow is its nature. Strangely enough, there is no want of scientific names to endorse this fraudulent butter, and the bogus *dairy* companies. A dairy that consists of wagon-loads of butcher's offal, fat-melting pots, fat presses, and pails and tubs of packed stuff, called butter, certainly is a bogus or sham dairy, and the term is a deception. Now the market is flooded with "Philadelphia print" butter, or it is so stated; and the *dairy* company themselves admit they are exporting large quantities of their product. The consequence is, that real butter is very low, and dairymen are suffering from the competition. Their own chosen leaders endorsed the fraud, and that is all the comfort they have from it. But why do they submit to the ruinous competition?

Removal of the Retained Placenta.—"J. M.," Omaha, Neb. No medicines can be relied upon to bring relief in a case of retention of the placenta. It is caused by adhesion to the surface of the uterus, which may be ruptured by a very simple operation by an experienced veterinary surgeon. Otherwise the parts may be allowed to slough away, which they will generally do without trouble. The strength of the cow should be supported by generous supplies of nourishing and easily digested food, and if feverish symptoms occur, light doses (4 ounces) of epsom salts, with half-ounce doses of saltpeter, may be given.

Protection Against Dogs.—"A. T. D." There is no safe protection for sheep against dogs, other than herding them in the day, and shutting them up at night in an enclosure provided with a "dog guard." Different forms of these guards are described in Stewart's "Shepherds' Manual," which every sheep owner should have and consult, as almost every contingency which may happen in sheep-keeping is treated of in the book. It is sold by Orange Judd Company, price $1.50.

Too Much Straw.—"K. O. S.," Lake Park. When soil is too rich in vegetable matter, or potash, such as newly cleared wood land, or fresh prairie soil, it causes an excessive growth of straw, and but little grain. The plan to adopt in such a case is, to plow just before the seed is sown, and either shallow or very deep. If the plowing is very deep, much of the rich soil is put where the plants do not reach it, or the sub-soil is mixed with the rich soil and dilutes it. We have tried this plan with potatoes with good effect.

Wonderful Cows.—Among the biggest of big stories is one of a cow, native bred, nine years old, kept in Vermont, which yielded in twelve months 633 pounds of butter. Her feed was pasture in the summer, and in winter 20 pounds of hay and 8 quarts of potatoes. This is not very good feed, and yet another cow, not so well kept, owned by the same person, produced 504 lbs. in twelve months. And besides this we read of a Shorthorn *cow* in Kansas, which produced a calf when *eleven months* old. Without saying this is impossible, it is safe to say that it is within only two months of it!

Anthony Waterer is a nurseryman at Woking, Surrey, England. He made on the Centennial grounds a fine exhibition of Rhododendrons, of both hardy and *tender* kinds. He enjoyed unusual advantages in having a tent to shelter his plants, put up at an expense to the Commission of several thousand dollars, while American exhibitors, with much larger and finer plants, had no other covering than the sky. In an article on Rhododendrons, which appeared in August last, we intended to give, and supposed that we did give, Anthony Waterer all the credit due him under the circumstances. Indeed, the article was quite favorable to him in what we did say, and still more so in what we *did not say.* He did not like the article, and he—or more likely some one for him—criticised it in an English horticultural journal, impugning our motives, calling it "evidently trade inspired," etc. We did not notice this attack, feeling that with those to whom we were known it would have no possible effect, and that where we were not known it was a matter of indifference. This same Anthony Waterer, since his return to England, has published a special catalogue for America. In it, on page 2, under "Rhododendrons," and as a preface to his list of those plants, he says: "☞ Since my return I have noticed that the Rhododendrons exhibited by me at Philadelphia, have been the subject of several articles in the American Gardening Publications, the object of the writers being to throw doubt on the hardiness and fitness for the American climate, of the plants grown at this nursery."—We shall not avail ourselves of the fact that our title being the *American Agriculturist*, we are not a "gardening publication," for our pages are largely devoted to gardening, and we have written about this man and his Rhododendrons. We might dispose of the charge made in an English paper, that our article was "trade inspired," and the charge in this catalogue as to our "object," by characterizing it briefly by a small word of three letters. As that might not be regarded as courteous, we will be more elaborate, and say that it is absolutely, unprovokedly, and unmitigatedly false. The full and complete account of Anthony Waterer's exhibition of his plants and himself at the Centennial, has not yet been written. We have the data, and may sometime waste the space on him. In the meanwhile, if he thinks he can increase his sales by the abuse of American journals and journalists, let him go on.

Sundry Farming Matters.

Recording Berkshire Swine.—"N. P. M.," Nemaha Co., Neb. The proper person to have a pig recorded is the one who owns it at the time it is recorded, or whose interest it is to have it done. The fee for record is moderate. Apply to A. M. Garland, Esq., Secretary Berkshire Record, Springfield, Ill.....**A Cow that Does not Breed.**—"Subscriber," Glen Rock, Neb. Some cows do not get with calf, while they are milking freely. It might be well to dry the cow, and try again, and if she fails, fatten her, as it is not profitable to keep a barren cow.....**Fancy Pigeons.**—"G. A. H.," Augusta, Ga. Messrs. Benson & Burpee, 223 Church St., Philadelphia, can supply all kinds of fancy pigeons. Their advertisement has appeared frequently in the *American Agriculturist* of late. If the advertisements were examined before such questions were put to us, these would generally be unnecessary. ....**A Coughing Cow.**—"C. R. M.," Huron Co., Ohio. A cough may be due to a variety of circumstances. It may be caused by indigestion, inflammation or irritation of the bronchial tubes by dust from the food, or from a tuberculous condition of the lungs. If either of the former, a change of food to moist cut feed, with some linseed meal, will be beneficial; if the latter, there is no help, and the cow will cough until she dies. ....**Oats for making Oatmeal.**—"J. R. A.," Franklin Co., Pa. Any plump oats will make oatmeal; but need to be kiln-dried previously to grinding. Oatmeal of good quality is made at Akron, Ohio.....**Elm and Ash for Water-Troughs.**—"T. W. E." Ash is more desirable than elm for water-pipes. If it is saturated with hot pine tar, it will be rendered still more durable.....**Salt as a Fertilizer.**—"J. D. E.," Butler Co., Ohio. From 100 to 250 lbs. of salt per acre may be used; the quantity depending upon the purpose for which it is applied and the character of the soil. Clay soils may need the larger quantity, and light soils the lesser amount. It is generally used for grass, clover, wheat, potatoes, and mangels; the last-mentioned being naturally adapted to salt soils, will require a liberal quantity.....**Strap for Cribbing Horses.**—"G. E. L.," Hopkinton, N. H. There are many improvements in nearly all methods of doing things, since 1869. The use of a strap around the throat to prevent cribbing is not to be recommended, as it may be drawn too tightly and the cribbing prevented too effectively by choking the horse. A muzzle for a cribber was described in the *American Agriculturist* for Oct., 1872, which is safe and effective.....**Corn-Cutting Machine.**—"W. H. T.," Louisville, Ky. There are several inventors busy with devices for cutting corn by machinery, but no machine has been as yet found perfectly fitted for the work. By and by, when the right machine appears, we shall be glad to announce the fact.....**Buckwheat per Acre.**—"Farmer," Maple Shade, Tenn. When buckwheat is thinly sown, that is about half a bushel per acre, upon good soil, it branches out abundantly and yields a heavy crop, sometimes as much as 50 bushels per acre. With one bushel of seed per acre, it rarely yields more than 25 bushels.....**Potato Planter.**—"A. E.," Westmoreland Co., Pa. A very effective one is known as "True's Potato Planter," but we cannot give the maker's address. As there is a very wide use for such an implement, it would seem to be the interest of the owners of these machines to make them known.

Catalogues Received.

In classifying catalogues, when we meet with those which cover two distinct branches of business—such as seeds and flowers—we put the address according to what appears to be the leading feature. When firms, known to be general nurserymen, issue a separate catalogue of greenhouse plants, we place that catalogue under florists.

NURSERYMEN.

George Achelis, West Chester, Pa.—Wholesale list of fruit and ornamental trees, etc.

J. W. Adams, Springfield, Mass.—Both wholesale and retail lists of a general nursery stock.

E. W. Atwater, Palmyra, N. Y.—Small fruits, selected collections offered by mail.

David Baird, Manaplan, N. J.—Leading varieties of fruits with a large collection of peaches.

A. T. Blauvelt & Co., Blauveltville, Rockland Co., N. Y.—A wholesale price-list of general nursery stock.

Bush & Son & Meissner, Bushburg, Mo.—This firm makes a specialty of grapes, and their remarkably condensed price-list contains a very large variety, with some new and promising kinds.

S. P. Carpenter, New Rochelle, N. Y.—New Raspberry, the "New Rochelle."

Geo. W. Campbell, Delaware, Ohio.—Grape vines in great variety, including novelties, small fruits, generally, and greenhouse plants.

Samuel C. Decou, Moorestown, N. J.—Small fruits and select fruit trees.

John Donaldson, Kittanning, Pa.—Fruit and ornamental trees, with specialties in peaches.

Foster's Hillside Nursery Co., Louisiana, Mo.—The "Thwack" Raspberry as a specialty.

E. W. Harrington, Palmyra, N. Y.—A very full assortment of small fruits, fruit trees, and root-grafts.

F. M. Hexamer, New-Castle, Westchester Co., N. Y.—Small fruits in great variety, and the largest collection of seed potatoes to be found anywhere.

David Hill, Dundee, Ill.—Large assortment of evergreens; also deciduous ornamental and fruit trees.

King & Murray, Flushing (L. I.), N. Y.—General fruit and ornamental stock. This is one of the oldest nurseries in the country, it was established in 1790.

Lawrence's Nursery Co., Sturgeon Bay, Wis—Wild and nursery evergreens and deciduous trees.

Henry Loomis, San Francisco, Cal.—Various sizes of Japanese Persimmons.—*Diospyros Kaki.*

Merrell & Coleman, Geneva. N. Y.—General collection of fruits, with ornamental trees and plants.

Thomas Meehan, Germantown, Pa.—Wholesale prices for a remarkably large and varied collection of ornamental trees and shrubs. Also fruits.

S. B. Parsons & Sons. Flushing (L. I.), N. Y.—A very large collection of ornamental trees and shrubs, which in some departments is unequaled. Rhododendrons, Azaleas, rare Conifers, and new Japan plants, etc.

E. Ware Sylvester, Lyons, N. Y., sends an abridged catalogue of his nursery, which contains a great variety.

T. L. Whitacre, East Rochester, Ohio.—Small fruits in general, with the "Freed" Blackberry as a specialty.

E. & J. C. Williams. Montclair, N. J.—Small fruits in general; the Duncan Strawberry as a specialty.

H. W. Williams & Co., Galesburg, Ill.—A wholesale list of a large and varied stock.

J. C. Wood & Brother, Fishkill, N. Y.—Wholesale catalogue of general nursery stock, including a large collection of evergreens.

SEEDSMEN.

R. H. Allen & Co., 189 and 191 Water St., N. Y.—This should have been noticed last month, but was overlooked; but the house is too well known to make the omission of importance.

B. K. Bliss & Sons, 34 Barclay St., N. Y.—A supplementary list of novelties, including new potatoes, a new Tomato, and other new things.

Hawkins & Cornish, Goshen, Orange Co., N. Y.—Vegetable and field seeds, and several potatoes not offered elsewhere.

B. D. Hawley, Hartford, Conn.—Garden and agricultural seeds, and garden and field implements.

King & Savage, 77 State St., Chicago, Ill.—A catalogue of vegetable, field, and flower seeds, and several supplements of special implements.

John Saul, 621 Seventh St., Washington, D. C., offers flower and garden seeds in great variety.

James M. Thorburn & Co., 15 John St., N. Y.—A special catalogue of tree and shrub seeds, which is this year even more full than heretofore, especially in the way of novelties and rarities.

David R. Wood, Morrisville, Vt.—Garden seeds in general, with seed potatoes as a specialty, including Bryant's Favorite, a novelty.

FLORISTS.

Paul Butz & Son, New-Castle, Pa.—A very full catalogue of greenhouse and bedding plants, with a supplement including evergreen and other ornamental trees.

Ellwanger & Barry, Rochester, N. Y.—We are so accustomed to see this name under "Nurserymen," that it seems strange to put it among the Florists. Their establishment is so large, that each separate department is a business in itself. We have from them a special Rose Catalogue, and another of Greenhouse and Hothouse Plants, each containing many novelties.

Wm. A. Harkett, Dubuque, Iowa.—A full collection, with the "Belle of Dubuque," a new, large double Daisy, and "Harkett's Perfection," a fine, variegated Lantana, as novelties.

Hoopes, Brother & Thomas, Westchester, Pa.—Another nursery establishment largely concerned in the florists' business. Their catalogue is very full, and we can testify from inspection to the general excellence of their stock.

W. F. Massey & Co., Waverly, (near Baltimore), Md., to which place they have removed from Chestertown, Md. Their very full catalogue is prefaced by a remarkably fine chromo of their new salmon-colored geranium, "President Perot."

Thomas Meehan, Germantown, Pa., sends a list of greenhouse and bedding plants.

Miller & Hayes, 5774 Germantown Ave., Philadelphia, Pa., issue a supplementary catalogue in which they offer various novelties, including roses, which are a specialty with them.

Nanz, Neuner & Co., Louisville, Ky.—A very full illustrated catalogue, with a colored plate of brilliant flowers.

C. A. Nordyke, Richmond, Ind., besides greenhouse and bedding plants, has a large variety of vegetable plants.

Thomas Pray, Jr., Central Falls, R. I.—A very full collection of plants, also flower seeds. Mr. P. has adopted the rather risky plan of publishing the names and addresses of those who do not pay their bills.

John Saul, Washington, D. C.—It is sufficient to say that this catalogue is as full as ever, with a bewildering list of novelties. A fine colored plate of the "Beauty of Glazenwood," a new yellow Tea rose, marvellously striped with carmine, is given.

A. Whitecomb, Lawrence, Kansas.—A beautifully neat catalogue of a well considered selection.

A. K. Williams, Richmond, Ind., calls his catalogue the "Rose-grower's Companion," it is very full in roses, but offers other plants.

Wm. C. Wilson, Astoria, (L. I.), and 45 West 14th St., N. Y.—Mr. Wilson does not make much noise about it, but he has one of the largest establishments in the country, and it is difficult to mention any good thing that he does not have in his full list.

I. C. Woods & Bro., Fishkill, N. Y., have a wholesale list of general greenhouse plants.

Woolson & Company, Passaic, N. J., make a specialty of herbaceous and other hardy plants, and with their descriptive catalogue, give useful reading matter relating to hardy plants.

EUROPEAN CATALOGUES.

Alégatière, Lyons, France, has among his novelties double and single Pelargonias, choice Carnations, and double tuberous Begonias.

IMPLEMENTS, FERTILIZERS, Etc.

S. L. Allen & Co., 119 South 4th St., Philadelphia, Pa.—The Planet Drill and Wheel-Hoe in its various forms, Cultivators, Hand Garden-Plows, and other Garden and Farm Implements. Since the Centennial they have shipped largely to all parts of the world.

Belcher & Taylor, Chicopee Falls, Mass.—Agricultural Implements in great variety, Meat Cutters, Presses, etc.

H. B. Hakes, Worcester, Mass.—Price list of the Hakes Swivel Plow in various forms and sizes.

F. B. Hussey, North Berwick, Me.—Price-list of the Hussey Plows.

D. Kahnweiler, 120 Center St., N. Y.—Cotton-seed Huller.

A. L. Sardy, Tarrytown, N. Y.—Phospho-Peruvian Guano, and other Fertilizers.

Wing & Evans, 38 Platt St., N. Y., make the Manhattan Blood Guano.

LIVE STOCK—POULTRY, ETC.

A. Corbett, 7 Warren St., N. Y.—Incubator and Artificial Mother for the Artificial Hatching and Rearing of Poultry.

E. Dillon, Normal, Ill.—A descriptive catalogue of Norman horses imported and owned by them, contains portraits and descriptions of many fine animals from their extensive stud, which consists of 35 stallions and 50 mares.

C. Duvall, Jr., Fancier's Agency, Louisville, Ky.—Pure-bred fowls, dogs, rabbits, and other fancy animals.

Thomas Fitch, New London, Conn.—Pure-bred Jersey (Herd-book) cattle; also, Grade Jerseys, bred especially for family cows and for large yield of butter.

George Grant, Victoria, Ellis Co., Kansas.—Mr. G. owns half of a county and a large amount of imported thoroughbred and native stock, consisting of horses, cattle and sheep. The descriptive pamphlet of the "Victoria Stock Farm" contains information interesting to intending settlers in that part of the country. The colony of Victoria has so far been very successful, and the stock enterprises of the settlers satisfactory.

J. C. Koehler, 503 North 2d St., Philadelphia, Pa.—Improved cedar-wood butter-tubs and coolers, with removable ice-chambers, for shipment of fruits and rolls in hot weather; also, cedar-vats and cedarware in general.

E. R. Pendleton, Westerly, R. I.—Premium White Leghorns, and eggs from the same.

Wendell, Troy, N. Y.—Fancy poultry and pigeons, and other birds; also, exhibition coops.

MISCELLANEOUS.

Freeman & Smith, Racine, Wis.—Aquaria, brackets, vases and other horticultural iron work in great variety.

Galloway and Graff, 1723–25 Market street, Philadelphia, Pa.—Terra-cotta vases, fountains, statues, etc. The admirable horticultural articles in terra-cotta, by this firm, were conspicuous in both the main and horticultural buildings at the Centennial.

L. C. Root, Mohawk, N. Y.—Bees, hives and all other apiarian appliances.

Ernest Steiger, 22-24 Frankfort street, N. Y.—Catalogue of German books in the various sciences and arts, and in general literature.

Strawberry Plants

By the 100, 1,000, or 10,000.

MONARCH OF THE WEST, Chas. Downing, Col. Cheney, Jucunda, *true.* **Kentucky, Seth Boyden, WILSON'S ALBANY,** etc., etc. Also, **GREAT AMERICAN, Cumberland, Triumph, Duchess, Capt. Jack, Duncan, Prouty's Seedling, Kerr's Prolific, Sterling,** and nearly **twenty** other **NEW** varieties. *A descriptive catalogue mailed all applicants.* **A. HANCE & SON,** *Nurserymen & Florists,* **Red Bank, N. J.**

STRAWBERRY PLANTS.

The following new varieties at the low rates named:

Star of the West........................$ 8 per 1,000.
Champion.............................. 4 per 1,000.
Kerr's Late Prolific.................... 10 per 1,000.

Also very fine stock of
Triomphe de Gand....................$ 5 per 1,000.
President Wilder.......................$ 5 per 1,000.

Fine Stock of all the other leading and newest kinds. Send for Circular. Address E. P. ROE,
Cornwall-on the-Hudson, Orange Co., N. Y.

FREE One dozen of the famous Seth Boyden strawberry plants to every person sending me one dollar for seed potatoes. Alpha, Brownell's Beauty, Eureka, Snowflake, Ruby, Late Rose, Extra Early Vermont, Early Dexter, and Fluke. One pound of either variety by mail, post-paid, 50 cts. Also Royal Rose, a new variety never before offered to the public. $1.00 per pound. Address
G. M. ROWE, East Chatham, Col. Co., N. Y.

STRAWBERRIES.

14,000 QUARTS PER ACRE. SEND FOR CIRCULAR, Showing how and what variety to grow.
H. H. SMITH, West Haven, Conn.

FOR STRICTLY FIRST-CLASS STRAWBERRY PLANTS,

Grape Vines, Raspberries, Blackberries, Currants, Gooseberries, Seed Potatoes, Garden Seeds, &c., send for my New Catalogue, free to all. Address F. M. HEXAMER,
New Castle, Westchester Co., N. Y.

STRAWBERRY AND RASPBERRY

Plants; also Fruit Trees, best varieties, warranted true to name. Let me price your list, and get stock *sure to live*, cheap. E. W. HARRINGTON, Palmyra, N. Y.

Strawberry, Raspberry, Blackberry plants, Currants, Grape Vines, Asparagus roots, Peach trees, &c. Send for Price List. JOHN S. COLLINS, Moorestown, New Jersey.

DUNCAN The Market Berry. See Feb. *Agri.* p. 71. Other kinds best quality. Low prices E. & J. C. WILLIAMS, Montclair, N. J.

STRAWBERRY PLANTS.

All the best varieties, warranted pure; prices *very low.*
C. S. PRATT, North Reading, Mass.

Raspberry Plants

IN LARGE SUPPLY.

BRANDYWINE, *true.* **Philadelphia, Highland Hardy, Brinkle's Orange, Black Cap** varieties, &c., &c. **Delaware, Ganargua, Thwack, Cuthbert,** and other **new** sorts. *A descriptive catalogue mailed to all applicants.* **A. HANCE & SON,** *Nurserymen & Florists,* **Red Bank, N. J.**

A NEW RASPBERRY,

The "New Rochelle."

Having a fine stock of this wonderful Raspberry, I now offer it to the public for the first time. It is hardy, a strong, healthy grower, and will produce more than twice as much fruit as any other known variety. Fruit large, of good flavor, and bears carriage well. Well rooted tips $6.00 per doz. One year transplanted, $10.00 per doz. A discount to the trade. Send for a circular.

S. P. CARPENTER,
New Rochelle, N. Y.

100,000 Strawberry Plants for $100. Good plants. No extra charges. See p. 114, March No. J. S. Collins.

WILD GOOSE PLUMS,

APPLES, PEACHES, CHERRIES, STAND. and DWF. PEARS, CRABS, Concord Grapes, Raspberries, Blackberries, Strawberries, Currants, Gooseberries, and other stock in full supply.

EARLY SHIPMENTS.—We are far South of most other large nurseries, which enables us to ship in much better season. **HEIKES NURSERIES CO., Dayton, O.**

SILK-CULTURE IN THE U. S.

A treatise on Mulberry and Silk-culture for 50 cts. Eggs of silk-worms, different breeds, *free from disease* (Pasteur's System), $6 per oz. Best varieties of Mulberry trees, for forest, ornamental, fruit trees, and for silk-worms food, such as the Mulberry Lhou, best grower by cuttings, the Japanese Mulberry, Moretti Elato, the Morus Rosea, and many varieties of the Morus Alba or White Mulberry tree, at very low prices. Send for circulars to L. S. CROZIER, Silkville, Franklin Co., Kas. Williamsburg P. O. (Special rates have been obtained from the Express Co.)

YOUR NAME PRINTED on 40 Mixed Cards for 10c.
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40 Finely Printed Visiting Cards, (9 tints,) with your name on them all for only 10 cts. Write for sample. Star Printing Co., Northford, Conn.

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50 VISITING CARDS, with name 10c. and stamp. Agents Outfit 10c. L. C. COE & CO., Bristol, Ct.

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IMPROVED BUTTER TUBS AND COOLERS,

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GILT-EDGED BUTTER, AS MADE BY **COOLEY'S SYSTEM,**
Uniformly, without regard to season or climate. A pamphlet, descriptive of this newly-discovered system, sent free to any one sending address, with 3ct. stamp, to the
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MACHINES FOR SAWING WOOD.

AND

Threshing & Cleaning Grain

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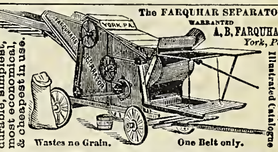
Parties who wish to purchase Machines that have proved to be the best in market, will do well to send for circulars and descriptive price-lists, which will be forwarded free.

Lightest Draft, most durable, simplest, most economical, & cheapest in use.



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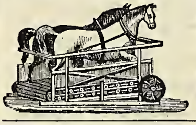

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Producing much more power than other railway powers, with *much less elevation.*

☞ *Send for Descriptive Circular.*

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Philadelphia, Pa.

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BEES or HONEY,
we will with pleasure send you a sample copy of our **Monthly GLEANINGS IN BEE CULTURE,** with a descriptive price list of our latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all Books and Journals, everything pertaining to Bee Culture. *Nothing patented.* Simply send your address on a postal card, *written plainly*, to
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For sale by dealers generally. Cincinnati, Ohio.

NOTE.—Consumers will consult their INTEREST by bearing in mind that a large proportion of the article sold as PURE WHITE LEAD is **adulterated** to the extent of from 50 to 90 per cent; and much of it does not contain a particle of Lead.

CAPEWELL'S Pottage Tongs, Tack Hammer & Knife Sharpener.

For Dish washing and
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Purposes.
These are all household conveniences.
Pulls, drives and sets Tacks.
Beats the
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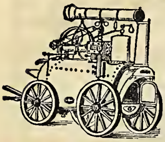
world sharpening knives and scissors, and cutting glass. Samples by mail, 35 cents each. All three for $1. G. J. CAPEWELL & CO., Cheshire, Ct.

3,000 LBS. OF MILK YIELD $54.20.



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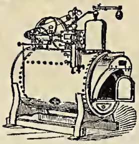
New Apparatus and Furnishings for Cheese and Butter Factories.

Especially approved by Prof. ARNOLD and all who have seen same.

Parties should see us before buying Return Flue Boilers for Cheese Factories, etc.; also, Creamery and milk Vats, as we have greatly reduced prices.



ECONOMIZER RETURN-FLUE BOILERS, FROM 2 1-2 TO 30 HORSE POWERS.

Fire entirely surrounded by water. Sixteen Boilers and Boilers and Engines sold during the months of January and Feb. The ECONOMIZER BOILERS are manufactured for us (in duplicate parts), under United States Patents, by Porter Manufacturing Company, Syracuse, N. Y., B. K. White, President, thus securing perfection and uniformity. The demand is unprecedented, even in these dull times. ☞ Send for Circulars.

WHITMAN & BURRELL, Little Falls, N. Y.,
Manufacturers of HUBBELL & CO.'S NEW GANG CHEESE PRESS, with right to use the Bandager and all Patents Guaranteed.
Agents for Annattoine and Johnson's Patent Fly-Proof Cheese Grease.

ALLEN'S PLANET Jr. SILVER MEDAL

Hand Seed Drills and Wheel Hoes, have also been awarded the **Centennial Medal and Diploma,** and the *Medal* of the *Great Horticultural Exposition, held at Erfurt, Germany,* besides a large number of *First* Premiums at State and County Fairs. Full Descriptive Catalogue of our whole line of goods *free.* Including our *Wrought Frame Horse Hoe, "Iron Age" Cultivator, Paris Green Duster, Hand Garden Plow, Transplanting Hoes, Corn Knives, etc. Every Farmer* should have a copy, and we want a **live agent** at work, or a club formed in **every town.** Send for **new** terms.

American Agriculturist Premium. **S. L. ALLEN & CO., 119 S. 4th St., Philadelphia, Pa.**

NEW EXCELSIOR LAWN MOWER.

IT HAS THE LARGEST SALE OF ANY LAWN MOWER IN THE WORLD.

It has been adopted, and can be seen in practical operation on **Central Park** and all the other **City Parks, New York; Government Grounds** and **City Parks, Washington; Boston Common, Boston; Prospect Park, Brooklyn;** and on almost every prominent Park throughout the **United States and Canada.**

THE GREAT TRIAL of Lawn Mowers was held in New York City June 25th, 1874. There the **Excelsior** came into competition with all the best Lawn Mowers in the world, and was awarded the **HIGHEST PREMIUM.**

Four sizes for hand-power; four sizes for horse-power.

Prices from **$14** to **$200. EVERY MACHINE WARRANTED.**

Address **CHADBORN & COLDWELL M'F'G CO.,**
Send for Circular. **Newburgh, N. Y.**

N. B.—We call **special attention** to our new **HORSE MOWER.** Gears entirely covered and weight reduced 200 lbs. It is the **LIGHTEST** and **BEST HORSE MOWER EVER MADE.**

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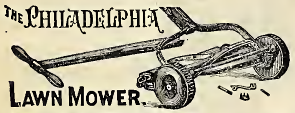

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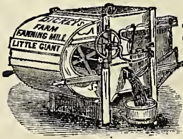

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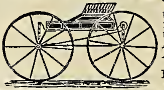

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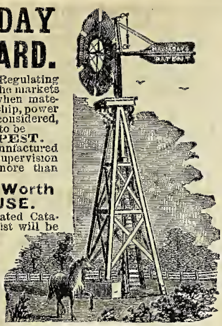

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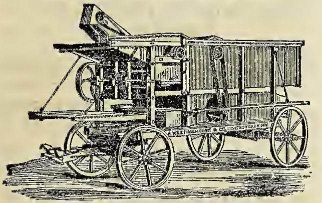

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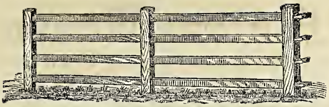

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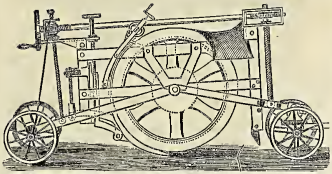

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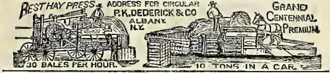
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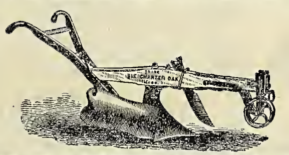

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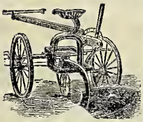

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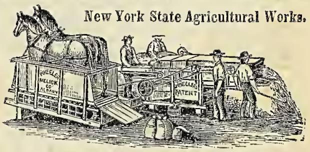

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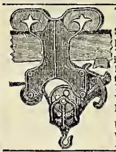

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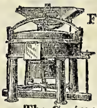

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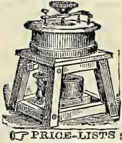

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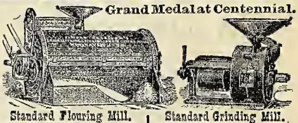

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Plymouth Rocks, Upham's stock; Leghorns, Brahmas, Bantams, etc.; Ground Bone, etc.; Shells for fowls and Land Fertilizers. Send for prices. A. VIGNOS, Canton, O.

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Light and Dark Brahmas, Partridge and White Cochins, Brown and White Leghorns, Houdans, and G. S. Bantams. For sale at all seasons, at reasonable prices. Eggs, securely packed in new baskets, $3.00 per 13, or $5.00 for 26. Please state what you want. Send for Circular.
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GAME FOWL. Red Irish Setters, and Carrier Pigeons, bred and shipped by **J. C. COOPER, Cooper Hill, Limerick, Ireland,** winner of Gold Medals at Paris and New York; also Thoroughbred Hounds, Beagles, and other Dogs. J. C. C. can likewise select **Sheep, Cattle,** and **Horses** for clients, having had long and large experience in them.

WHITE FACE BLACK SPANISH, $3 to $5 each. Eggs, $2 per dozen; 3 dozen, $5. Also 10 varieties Standard Poultry and 25 of Pigeons. Send stamp for Circular. Orders shipped prompt. ☞ I received **135 Premiums** at **5 Fairs in 1876.**
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Having bred White Leghorns exclusively for 10 years, I am now prepared to furnish Eggs at $2.00 per doz., or 3 doz. for $5, from as fine Stock as any in the country. ☞ My Fowls have always taken Premiums wherever shown. Received 1st and 2d Premiums on Fowls at Providence, R. I., Feb., 1877, and Combination Premium for Best Cockerel.

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HOUDANS,
BROWN LEGHORNS,
WHITE LEGHORNS,
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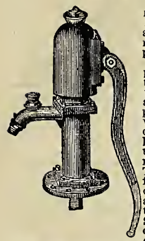
"UNIVERSAL FORCE PUMPS."

Date of Patent, Aug. 8th, 1876.



After six years endeavor to furnish the most reliable force pumps in the market, the above pumps are respectfully offered. as the best results, in my judgment, of the public requirements.

Their **adaptability, great power, careful finish** in detail, and consequent **economy,** will commend them. In case of accident, any part can be easily replaced, without sacrificing the whole pump. They can be immediately converted from **right** to **left-hand pumps,** by swiveling the air-chamber and handle to any required angle with the spout. They are changeable from lift to force pumps. Are for the house or for out-door wells of any depth, and having close tops, can not be tampered with.—**Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

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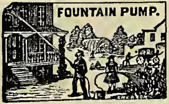
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Used standing, sitting or reclining.

Hundreds of graceful movements.

For home, office, schools, hospitals.

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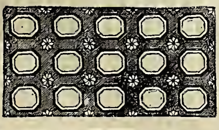

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Which, after twelve years' practical test, have proved themselves to be the best and cheapest fertilizers in use, the crops in many instances being

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Please mention this paper.

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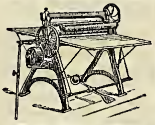

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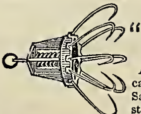

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Dry Ground Fish Guano, 8 to 10 per cent Ammonia: 15 per cent Bone Phosphate of Lime.

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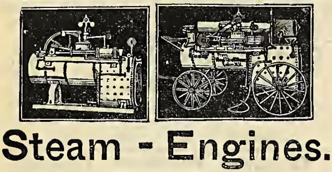

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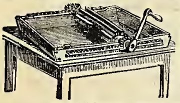

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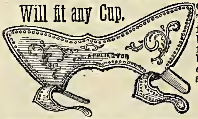
Will fit any Cup.



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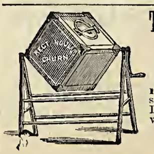

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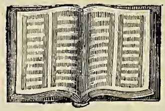

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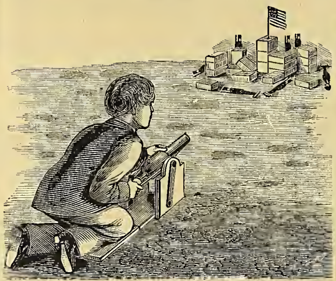

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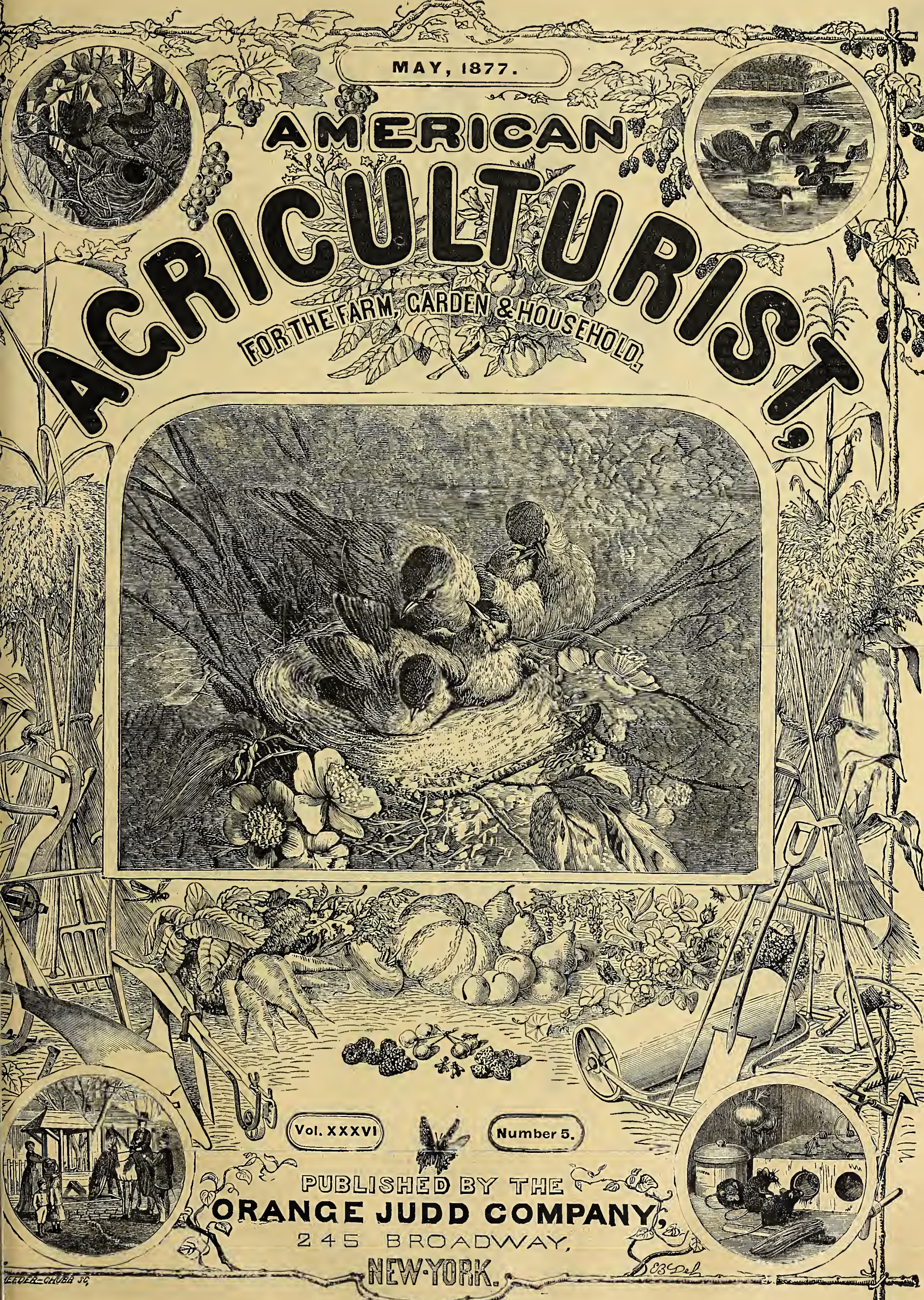
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Vol. XXXVI
Number 5.

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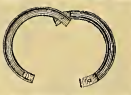

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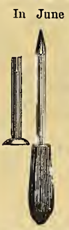

In June of 1872 we gave illustrations of a Trochar and Cannula to be used in ringing a bull, and on page 13 (January) and page 97 (March) of this Journal for 1873 we described the use of this apparatus in relieving hoven in cattle. These articles have brought out a large demand for Trochars, and failing to find just the right kind among the makers of surgical implements, we have induced an establishment to undertake their manufacture. We give herewith a small engraving of the Trochar. These articles are now in the trade, and may be had of most dealers in agricultural implements. Those who can not get them from dealers can receive them from this office, prepaid, for $1.00.

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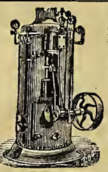

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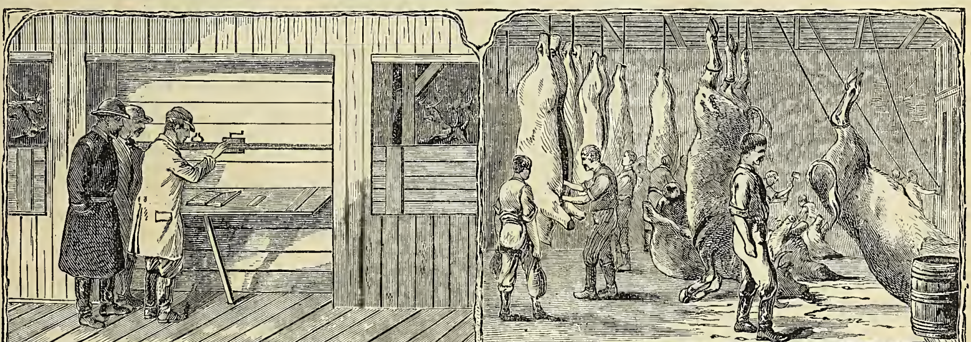

THE FOREIGN MEAT TRADE.—*Drawn and Engraved for the American Agriculturist.*

We have frequently referred to this new business of exporting beef and mutton, which promises to have a most important influence on our system of agriculture. That our readers may have some idea how this business is carried on, we have prepared the accompanying engravings, to illustrate the methods of preparing the meat. In figure 1 is shown the scales where the cattle are weighed, not singly, but in a drove of 40 or 50 at once. This scale has a capacity of 100,000 lbs., which is equal to the weight of 50 head of 2,000 lbs. each. None but the best cattle are taken for this trade, and most of them will go over 1,500 lbs. each. When weighed, the drove is taken to the slaughter pens, as shown in figure 2, and when there are very rapidly reduced to beef. The method of preparing the carcasses is shown at figure 3. A steer is hitched by the hind legs to a rope, and is instantly hoisted out of the pen on to the dressing floor, where it is killed, skinned, and halved. The sides of beef are moved to a cool room, to hang for a few hours, and the quarters are then sown up in canvass bags, after which they are removed to the steamship, and hung up in the refrigerator, (see fig. 4). The refrigerator (fig. 5, page 169) is an air-tight compartment, lined with non-conducting felt; in the center of it is an ice-house, seen in the engraving. A current of air is drawn into the ice-house by means of a fan, operated by a steam engine. The air, cooled by passing through the ice, is forced out at the bottom of the ice-chamber, through ventilators, (seen in figure 4,) and after making the circuit of the room, and cooling the meat, the air-current is drawn out through a door at the upper part of the room, (also seen in figure 4,) and is again forced through the ice, and then again through the meat-room. Whatever moisture is gathered by the air from the meat, is condensed in the pipes which pass through the ice, and escapes along with the waste water from the ice through the drain, shown in the plan, fig. 5. In this way the air is cooled, dried, and purified, and the meat, kept in the most perfect condition, reaches its destination in far better order, than it frequently appears in at the shops in this country. The favor with which this exported meat—mutton as well as beef—is received in England, is a guarantee that the business will increase as long as we can produce the cattle and sheep at the price at which they now sell in the market. It is very certain that the prices of beef would decline rapidly here, if it were not that the surplus is thus exported; as so many as 2,000 head of heavy cattle, taken from our markets in a week, must necessarily have a tendency to lower prices, if they were all to be sold here on an overstocked market. This fact, and that there is a profit now in the business, would show that the trade is likely to continue and increase.

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To Prevent a Cow Sucking Herself.—"V. D. Van N.," Hightstown, N. J., uses the following method of preventing a cow from sucking herself. A surcingle is buckled around the cow's body, and a piece of sack-cloth is hung to it in front of the udder. With this cloth in the way the cow can not suck herself.

Calendar for May.

Day of Month.	Day of Week.	Boston. N.England. N. York State, Michigan, Wisconsin. Iowa. and Oregon.			N. Y. City, Ct., Philadelphia. New Jersey. Penn., Ohio. Indiana, and Illinois.			Washington, Maryland, Virginia. Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	4 55	7 0	11 41	4 58	6 56	11 35	5 2	6 52	11 28
2	W	4 53	7 1	morn	4 57	6 57	morn	5 1	6 53	morn
3	T	4 52	7 2	0 24	4 56	6 58	0 17	5 0	6 54	0 11
4	F	4 50	7 3	0 58	4 55	6 59	0 53	4 58	6 55	0 46
5	S	4 49	7 4	1 25	4 54	7 0	1 21	4 57	6 56	1 16
6	**S**	4 48	7 5	1 47	4 52	7 1	1 44	4 56	6 57	1 41
7	M	4 47	7 6	2 7	4 51	7 2	2 6	4 55	6 58	2 4
8	T	4 46	7 7	2 26	4 50	7 3	2 26	4 54	6 59	2 25
9	W	4 45	7 8	2 45	4 49	7 4	2 45	4 53	7 0	2 46
10	T	4 44	7 9	3 4	4 48	7 5	3 6	4 52	7 1	3 6
11	F	4 43	7 10	3 25	4 47	7 6	3 28	4 51	7 2	3 32
12	S	4 42	7 11	sets	4 45	7 7	sets	4 50	7 3	sets.
13	**S**	4 41	7 12	8 21	4 44	7 8	8 15	4 49	7 4	8 8
14	M	4 40	7 13	9 33	4 43	7 9	9 25	4 48	7 4	9 18
15	T	4 39	7 14	10 36	4 42	7 10	10 28	4 47	7 5	10 20
16	W	4 38	7 15	11 27	4 41	7 11	11 20	4 46	7 6	11 14
17	T	4 37	7 16	morn	4 40	7 12	morn	4 45	7 7	11 56
18	F	4 36	7 17	0 7	4 39	7 13	0 1	4 44	7 8	morn
19	S	4 36	7 18	0 40	4 38	7 14	0 36	4 43	7 9	0 32
20	**S**	4 35	7 19	1 6	4 38	7 15	1 3	4 43	7 10	1 0
21	M	4 31	7 20	1 28	4 37	7 16	1 27	4 42	7 11	1 26
22	T	4 33	7 21	1 51	4 36	7 17	1 51	4 41	7 12	1 52
23	W	4 32	7 22	2 13	4 36	7 18	2 15	4 40	7 12	2 17
24	T	4 32	7 23	2 36	4 35	7 19	2 40	4 40	7 13	2 43
25	F	4 31	7 24	3 3	4 34	7 19	3 7	4 39	7 14	3 12
26	S	4 30	7 25	rises	4 34	7 20	rises	4 39	7 15	rises
27	**S**	4 29	7 26	8 37	4 33	7 20	8 28	4 38	7 16	8 21
28	M	4 29	7 27	9 33	4 32	7 21	9 26	4 38	7 16	9 18
29	T	4 28	7 28	10 18	4 32	7 22	10 11	4 37	7 17	10 4
30	W	4 27	7 29	10 57	4 31	7 23	10 50	4 37	7 18	10 44
31	T	4 26	7 29	11 26	4 31	7 24	11 21	4 36	7 18	11 15

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	5	6 35 mo.	6 23 mo.	6 41 mo	5 59 mo.	5 29 mo.
New M'n	13	0 45 mo.	0 33 mo.	0 21 mo	0 9 mo.	11 39 12'h
1st Quart	19	8 12 ev.	8 0 ev.	7 48 ev.	7 36 ev.	7 6 ev.
Full M'n	26	11 21 ev.	11 9 ev.	10 57 ev.	10 45 ev.	10 15 ev.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1877.

Needs for the Future—The Prospect.

It is very evident that raising and feeding animals for meat, must receive more attention than has hitherto been given to this branch of farming. The speculation in pure bred live stock, if it has been an evil at all, or has been carried to excess, as many persons have believed, has not been an unmixed evil by any means. As we have thought, and have frequently said, the speculative furore excited public interest, and the undoubted merits of the animals themselves, have fastened attention upon them, and by their means vast improvement has been effected in our herds and flocks. If some people have gone in too heavily, and have sunk money out of present sight, they have at least gained wisdom, and by and by the increase of their stock will bring ends to meet again. The vast increase of wealth contributed to the agricultural interest by these improved animals, is now being manifested. As good stock is coming forward from the prairies and plains of Kansas and Colorado, as have hitherto come from Illinois and Kentucky pastures. The value of the product is thus doubled. This is but the beginning of the shower, which must by and by become a torrent. A channel seems to have been opened for the increased supply of largely improved beef, mutton, and pork, now being produced, which promises to be highly profitable. Thus the long hoped for opportunity of changing our system of farming, has probably arrived, or is very near. While we wait and hope, events shape themselves by force of circumstances which we cannot control, and which seem to be mere accidents. Thus the experimental shipment of a few carcasses of beef to England, a year ago, seems to have opened a way for us to change our exhaustive system of farming. Let us avail ourselves of the opportunity; feed as many animals as we can, and raise root and fodder crops for this purpose. At first we must use artificial fertilizers freely, and afterwards as may be needed, to keep crops up to the highest limit. "High farming" must now be the rule if we are to make money. We must get rid of our scrubs: of beeves, that don't make beef; of cows that neither give milk nor yield butter; of sheep that afford neither wool nor mutton; of pigs that make no pork or lard, and of poultry that lay no eggs. We must keep only the best, that is, grades from pure bred males; we must feed high and mature quickly, make rich manure, grow heavy crops, cultivate thoroughly, turn off from one acre as much as we have done heretofore from two, three, or four, and then American Agriculture, which is the freest industry in the world, will be the most profitable.

Hints about Work.

Corn.—This is our great national crop, and ever will be. No known vegetable production can take its place with us. This month the thoughts and labors of the majority of American farmers are directed to this crop. But in by far too many instances an insignificant amount of either thought or labor is given to it. This is shown by the very poor average yield of the crop. We set our figure at 75 bushels per acre. Sometimes we have reached or exceeded this, but more frequently have fallen short. But this is no reason for despair. It is rarely that any person fails that he can not see how he might have succeeded, had he only been more careful. The main points for success are: plant on freshly stirred soil, the planting following closely on the plow; use some active fertilizer in the hill or drill—Peruvian guano or blood fertilizer will be found excellent; use well selected, sound seed, and begin to cultivate, if the ground is hard or baked, before the young corn is seen. For the rest we shall have something to say next month.

Crows and Cut-worms.—We believe the crow is a much abused bird. No one doubts about the cut-worm. If the seed corn is washed in warm water, in which some fresh pine tar is well stirred up, and then dried in plaster, the cut-worms will rarely disturb the sprouts, and if there are no cut-worms about the hills, few crows will disturb the crop. Quick planting on a newly turned sod will give the worms work enough on the grass roots.

Roots.—Sow mangels this month. Mr. Harris "Talks" about this crop this month, and recommends 8 lbs. of seed per acre. This is very heavy seeding; 4 lbs. will give a good stand if the seed is good. The cost of the extra four pounds saved, will buy 50 lbs. of nitrate of soda, or 70 lbs. of guano, and the saving of labor in singling a few thousand plants on an acre, will buy more fertilizers. Some farmers favor heavy, others light seeding; and very few who grow roots thin the crop enough. If 8 lbs. of seed is sown, the plants must be thinned vigorously. Those who have grown roots will follow their own method; those who have not had better try both quantities of seed, and decide by their success which is best. The points essential to success with corn, apply to root crops as well.

Clover.—Those who have neglected to dress the clover fields with 100 pounds of gypsum per acre, should do it at once. If the ground is poor, 100 pounds per acre of either Peruvian guano, or 80 pounds of high grade muriate of potash, would help the crop greatly. The money will be returned in the seed which may be saved at the second cutting.

Meadows.—There are meadows that have been pastured since they were green up to the present time, that will be expected to give a crop of hay in June or July. The homely old adage, "you can't have your cake and eat it too," will apply to this unprofitable practice. It is cheaper to buy hay than to pasture meadows in spring.

Manure.—See that the manure in the yards is not washed by the rains. Pile all of it up neatly, and keep the sides square, and the top flat and dishing. If for want of rain the pile heats and becomes too dry, turn it over. The labor will be well expended. Add in every possible way to its bulk and quality.

Potatoes.—Plant the bulk of the crop as early as possible, to get ahead of the late broods of the Colorado beetle. Procure a supply of *pure* Paris green in readiness for active warfare as soon as the enemy appears. Devoe makes a Paris green which is warranted pure; procure this in the original packages. A few farmers may club together and get a 14-lb. can from headquarters.

Beans.—This crop deserves better treatment than it frequently receives. Those who know its value, give it a fair chance. There is more profit in 25 bushels per acre, at $1.50 or $2 a bushel, than in many crops grown with greatly more trouble. It may be planted at the latter end of the month, or a piece of clover, to be mowed early next month, may be reserved for it. Make the rows 27 inches apart.

Fodder Crops.—A succession of fodder crops should be planted this month, for dairy cows, horses, calves, sheep, and pigs. For all these animals a green crop, to be cut when pasture begins to fail, is of the greatest value; it must be something that will grow quickly, will furnish a heavy cutting or two, and be agreeable and nutritious.

The New Fodder Plant.—It might be well to try the new fodder-plant, Prickly Comfrey, that has been described in the *American Agriculturist*, (see January number, page 19), in a small way. It is no objection to this plant that it is a free grower, and may easily become a weed. So much the better for it. That is a great recommendation. There is no more common weed than clover, yet we do not object to clover because it finds its way everywhere, and keeps its hold. If this plant is useful, the more vigorous it is the better for our purpose. But let it be tested judiciously and sparingly at first.

Brood Mares.—There is no need to keep brood mares idle when nearing their time. Slow farm work and gentle driving, will be useful rather than otherwise. Watch the mare well, and see that her health is kept perfect; give her a roomy, loose stall, where there is no possibility of injury, and she may be worked up to a day or two of foaling. Laxative food, such as bran, ground oats, with some linseed oil-cake meal, or a few chopped ruta-bagas, will be healthful. If a gentle purgative is needed, give one pint of raw linseed oil, but no salts.

Cows and Calves.—It is well to observe caution in changing cattle from dry feed to full pasture. The safe way is to feed on the usual dry fodder before turning out, and bring up the stock early in the afternoon, and feed again on dry feed with some roots. Another safe precaution is to dose the calves and yearlings with two ounces of Epsom salts for each one, for two days before they are turned out, and then graduate the feed as mentioned. A daily dose of half an ounce of sulphur and as much salt, given every night for a week or two, with the observance of the above precautious, will prevent the fatal "black quarter," or carbuncular erisypelas.

Sheep.—Watch carefully the ewes and lambs that are at all inclined to be loose, lest the fly should strike them. If they become fly-blown, shear the parts and smear copiously with linseed oil and tar. Newly shorn sheep should be kept under cover during cold rains. If this precaution is observed, early shearing is not objectionable. Feed lambs extra food to push them forward. All that is gained in this way now, becomes a double gain by and by.

Pigs.—Sows that are bred this month, will have pigs in September, an excellent time for those who can make small pork for Christmas. Those animals that come to market young, are the most profitable, and a 60 to 80 lbs. 3 months pig is good to have for sale at the holidays.

Machines.—Mowers should be looked after; old ones put in good order at once, and new ones ordered. In buying, look carefully into the claims of the leading kinds. It must not be forgotten that while novelties are worth close attention, an old reputation for undoubted excellence should not be lightly ignored in the search for new things. No farmer with more than five acres of grass, can afford to go without a mower and a horse-rake at least, and perhaps a horse-fork should be included.

Notes on Orchard and Garden Work.

There is no month in which it is more difficult than in May to so shape these Notes as to meet the wants of the greatest number of readers. Whether the season be forward or backwards, or one lives a degree or two north or south, the first of June finds vegetation about equally advanced, but in the present month, while many of our readers have their spring's work well along, others have but fairly commenced. It seems like repetition to so often refer to the Notes of former months, but experience shows it to be necessary, and a great many who ask us about matters relating to the work of the season, would be saved the trouble of writing, did they consult the previous issues of the present volume. This month there is a great deal of moving; those who live in towns and villages change their residences, and many go from cities and towns to try for the first time a life in the country, or at least in the suburbs of cities. Custom has, in many sections, fixed May 1st as moving day, and as a consequence there is a great deal of

Late work in the Garden,

whether it be in the way of fruits, vegetables, or flowers. It is much later than one would choose to begin gardening of any kind, but one who only now comes into possession of land which is to be a garden of some kind, need not be discouraged, for much can be done in all departments even at this late day, and we shall in good part shape the present Notes to meet the needs of those who are obliged to begin their gardening operations late.

Orchard and Nursery.

Planting is usually finished by this time. Trees that have been heeled-in may still be planted. If trees are sent late from nurseries, they may be

Shrivelled or Started.—If the bark is dried and shrivelled, bury the trees, root and top in sandy soil, and at the end of a few days they will come out all right. If they have become heated in the transit, and pushed long white shoots, cut back each branch to a bud that has not so started.

Mulch all late planted trees; it will be well to mulch all planted this spring, before the drouths come.

Grafting may still be done, but more care is required. When vegetation starts, the bark will slip very easily, and a careless operator, in sawing off a limb, may strip the bark and make a bad wound upon the stock. We have grafted apple and pear trees when in full bloom with perfect success. Full directions were given last month.

Thinning the Fruit should begin as soon as it can be ascertained how much is "set." In the Southern States, it is quite time that this was done, and it should be attended to everywhere as early as practicable. There is nothing of more importance to those who grow fruit for profit, than thorough and severe thinning. This is especially the case with peaches and pears, and we are very sure that it will pay with the choicer kinds of apples. In ordinary years, three or four times as much fruit sets as the tree can bring to perfection. Thorough thinning will give about the same bulk of fruit of a quality so much finer than when all is allowed to remain, that a single trial will show its value.

Insects.—*The Borers* of fruit trees are not all alike, that of the peach belonging to a very different family of insects from that of the apple, but they agree in their destructiveness, and the methods of treating them are the same. Trees at planting should be carefully examined for the insect, and this cut out when found. Examine the trees in the orchard; the saw-dust, or a depression in the bark, will show the presence of the borer; cut it out, or probe it with a wire. *Tent Caterpillars* hatch as soon as there are any leaves. The proper time to destroy them is in the egg. If a web is seen—and they are most conspicuous when the dew is on in the morning—go for it. If you have gloves, well; if not, the caterpillars will not harm you; pull away the nest with the caterpillars, and kill all. *Curculios* not only attack plums, but cherries, peaches, and other fruits. There is but one sure remedy; jar the tree early in the morning, when they are inactive, and catch the insects on a cloth; crush or burn. They begin soon after the fruit is set, and continue for some months. Avoid vaunted cures, such as disagreeable stuff to be hung in the tree; the curculio laughs at such.

Tree Seedlings, whether of fruit or forest trees, need to have the soil stirred between the rows, and all weeds removed; thin if over-crowded.

Seedlings of Forest Trees, even of the most robust kinds, are exceedingly tender when young. The young trees, when they come up in the forest, have an abundance of shade, and in cultivation, more are lost for want of this than from any other cause.

Seed-beds, when small and few, may be shaded by a lattice made of laths, tacked on to strips, putting the laths as far apart as their own width. These screens are to be supported above the beds by stakes. Large beds may have a screen high enough to work under; this may be made of poles, covered with evergreen or other boughs, and supported by crotched posts. In lack of either, sticking leafy twigs quite thickly in the bed among the seedlings, will be better than nothing.

Fruit Garden.

Where circumstances make it necessary to plant late, it may be done, if plants and trees can still be had in a dormant condition. Useful hints on planting will be found in the Notes for January last. Plants set now will be likely to have the summer's heat and drouth to contend with, before they have become fairly established, and unless care is given in mulching them, their growth will be seriously retarded if they do not die altogether.

Mulching consists in covering the soil with a thickness of several inches of some material which will shield it from the direct rays of the sun, and prevent the evaporation of moisture, while it is sufficiently open to allow any rain that may fall to pass through to the soil. It is also of great service in keeping the soil loose and open, as the surface can not bake and form a crust after each rain, while at the same time it prevents the growth of weeds. Litter of any kind may be used that will not bring in the seeds of weeds. Near the coast "salt-hay," or hay made on the brackish marshes is abundant, and a nearly perfect article for the purpose. Elsewhere hay from fresh marshes, straw, cornstalks or other available material may be used. Leaves, including "pine straw," make a good mulch, and spent tan-bark and sawdust are sometimes used. We have seen small stones used as a mulch with good effect. In case mulching cannot be done, some of its good effects may be produced by

Working the surface, keeping the top soil open and light, so that it will conduct the heat less readily than when compact.

Fruit-Picking and marketing will be in order, in some localities, and preparations must be made for the work in others. See article on page 178.

Currants and Gooseberries are both subject to the attacks of a caterpillar, commonly called the "currant worm," which, if neglected, will soon leave nothing but bare stems and shrivelled fruit. See last month's Notes. It is there directed to use 2 oz. of the powdered White Hellebore to the pailful. A friend who has had much experience, says that he finds a tablespoonful sufficient. Two or three applications at intervals of a few days will get rid of them. Gooseberries are almost entirely marketed green; in some localities green currants are in demand, in this case pick so as to thin the crop.

Blackberries and Raspberries.—Such suckers as are not wanted for next year's canes should be treated as weeds. The growing shoots should be tied up when tall enough, and prevented from entangling themselves with the old canes.

Grapes may still be set. The first year grow but a single shoot, and keep it tied up. The caterpillar which folds the leaves of the developing shoot, can only be managed by hand-picking, though it really does less damage than is supposed, as it stops the prolongation of the shoot just where those who follow close training would do it. The most troublesome of the early insects on the vine is the Rose-bug, which appears at blossoming time, making sad havoc. There is no remedy but catching and killing; in early morning they may be shaken off and caught in a pan or cup in which is some water, to prevent flying. Whenever the first signs of mildew appear—grayish spots on the under side of the leaf—use the sulphur-bellows. Each shoot sets three, or two, bunches; market-growers claim that it pays in extra size and quality, to remove all but one.

Pears.—Thin as soon as the young fruit begins to grow; no fruit is more improved by thinning freely.

Strawberries.—After blossoming, the sooner the mulch is on the better; not only to retain moisture, but it will be needed to keep the fruit clean. Good growers find a profit in giving a dressing of guano as the fruit is growing, and before a rain.

Kitchen and Market Garden.

Those who come into the possession of a garden ground this month need not be discouraged by the lateness of the season, as, save a few things, satisfactory crops may be had of nearly all vegetables. Plants of tomato, cabbage, and some others, can be purchased in most places, or had of a neighbor.

Sowing of all tender things, corns, beans, squashes, and all that family, and others, may be done as soon as cold nights are over, and local experience shows that it is safe to plant corn.

Succession Crops of radishes, lettuce, spinach, etc., should be put in at intervals of a week or ten days.

Varieties.—For a list of the well-tested kinds, see Feb. Notes. For novelties, see catalogues.

Horse Culture.—Where the garden is large enough, it is a great gain to do most of the cultivation with a horse implement. The rows should be long, and wide enough apart for a narrow cultivator; these are made to work at 24 to 30 inches.

Asparagus.—Those who know no better prefer white, or blanched asparagus, which is obtained by covering the beds with several inches of litter. Green is vastly better, as people are finding out. For family use the shoots are none the worse for being so large that they have sprouted or broken a little at the head or top, but for market it must be close and firm. Cutting is best done with an ordinary butcher-knife, cutting about two inches below the surface, and always away from the crown, so as not to injure other shoots. In favorable weather it must be cut every day, and sometimes twice a day. Wash, and stand upright in boxes, if not to be bunched at once. Bunching and bunchers are treated in full in February and May of last year; some half dozen kinds of bunchers are figured.

Beans.—Sow bush sorts in drills 30 in. apart, and drop the beans about 3 in. apart in the drills; cover 2 in. or less. Lima Beans may wait until cold rains are over and the ground warm. Make rich hills, 4 feet apart each way; set a pole 8 or 10 feet high in each. Press the beans into the soil eye down, 6 or 8 to each pole; when well up, thin to four.

Beets.—Thin the early planting as soon as large enough, and keep clean. Sow the main crop, as soon as the weather is settled, in drills 15 in. apart.

Cabbages and Cauliflower.—Plants in hot-beds should be well hardened off and ready to set out. Set the plants 18x30 in. apart, down deep, and press the soil very firmly around the roots. Seed for late crops may be sown. Market gardeners usually make two sowings, 10 or 15 days apart, to be sure to have plants in abundance. Later cauliflower seed is sown about two weeks later than cabbage seed.

Carrots may be sown the same as beets; the main crop is put in after the soil is well warmed, using a great abundance of seed, so that the young plants can break through the ground.

Celery.—A correspondent writes for directions for "a farmer to grow celery; not for a market gardener." We think that the plan that those follow who grow it for a living, is likely to be the best for our farmer friend. He can either buy or raise his plants; if he buys, from the middle of June to the middle of July will be as early as he can get them. To raise the plants, the seed should be in as soon as possible; it should have been sown last month. Prepare a rich seed-bed, and sow the seed in shallow drills 10 inches apart, covering but slightly, and go over the bed with a light roller, or pat the soil down with the back of a spade, to bring it in close contact with the seeds, and insure germination. Some put radish seed in with the celery, in order to see the rows sooner; working the soil must begin early and the plants weeded as soon as weeds can be seen. When the plants are 3 or 4 inches high, the tops are cut off, to make them more stocky. Some of the dwarf solid kinds are preferred to the tall sorts, as they are easier to manage, and give as much edible stalk as the tall kinds.

Corn.—A little of some of the early sorts may be put in at a venture, before it is safe to risk a large planting. We prefer drills made to hills in the garden. Enrich the drills, 3 or 4 feet apart, according to the variety, and drop the seed about 6 inches apart.

Cucumbers.—Seeds may be sown as soon as the season will allow, and plants from the hot-bed set out. If there are no hand-lights, a box, basket, or other shelter, may be turned over the plants at night. Make the hills 4 to 6 feet apart, and put in an abundance of seeds, as the bugs will take their share.

Dandelion.—Those who esteem the wild dandelion will find the improved cultivated sorts enough superior to pay for growing them, for either greens or salad. Sow seeds this month.

Egg Plant.—These must not go out until the weather is quite warm—in the climate of New York the first week in June. Keep the young plants in a growing condition, by maintaining a high temperature and avoiding chills. Look out that no stray potato beetles get among them.

Horseradish is always grown from "sets," or pieces of slender roots 4 to 6 inches long. Market gardeners always plant it as a second crop, between rows of early cabbages or beets. Put in sets half way between the rows and 18 inches apart, making holes with a light crow-bar, 10 inches deep. In the family garden plant it by itself 18 inches each way.

Kohlrabi.—A choice and delicate vegetable, when well grown, and very poor otherwise. Transplant from hot-bed, or sow seeds in rich ground, thinning to 8 or 10 inches. Use when young and tender, the "bulbs" not larger than a tea-cup.

Leek.—Weed the early-sown, or sow at once.

Lettuce.—Transplant from hot-bed or seed-bed to rich soil, 12 to 15 in. each way. Sow for a later crop.

Martynia, the unripe pods of which are esteemed for pickles wherever known, is sown when the soil is warm. Give the plants 3 feet each way.

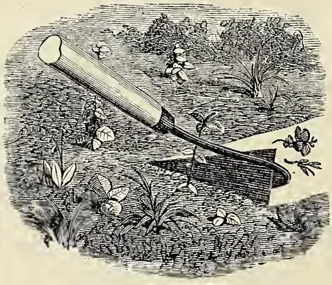
Melons, Musk.—Set out those started on sods, and sow seeds in plenty in hills 6 feet each way.

Melons, Water.—Many of the seeds are imperfect, and when good often slow in coming. Sow liberally, in warm rich soil in hills 8 feet apart.

Squash.—Treat the same as cucumbers. Put the bush sorts 4 feet and late kinds 8 feet each way. Manure abundantly and watch for insects.

Sweet Potatoes.—See article on this culture in Feb. last. Do not plant too early.

Tomatoes.—The plants still in the hot-beds should be hardened off by giving full exposure on mild days. In poor sandy soil, which gives the earliest crops, mark off 3 feet each way and in heavy soil 4 feet, putting at the crossings a shovelful of good manure, or a handful of Peruvian guano, working either well with the soil before setting the plants. In gardens they should always have a trellis, of some kind, to keep the vines in shape and the fruit from the ground. We have given various styles, and any one can make a support with a few poles.



LANCE-HEADED HOE.

Turnips.—It is too late to sow the flat kinds. If those now growing are troubled by the "flea," dust with lime. If the white worm is at the root, dig all up and destroy, as they will come to no good.

Odds and Ends.—Label every sowing, with kind and date....Weeds can be destroyed easily when young, that in a few days will give trouble—keep ahead of them. A long-toothed steel rake does splendid work....Have slaked lime in readiness for various insects, and where potatoes are grown, Paris green.....Liquid manure, from cow manure, and weak, or guano, a teaspoonful to the gallon, may be used with effect on most plants, except in a dry time....Some of the hand cultivators now in use are greatly superior to the hoe, and will do, in intelligent hands, much more and better work....A lance-headed hoe is one of the most useful implements one can have. The head, see engraving, is of heavy steel plate, 4½ in. long by 2½ wide at the top, fixed to the handle as shown. Any blacksmith can make one, which if kept sharp will do wonderful execution.....Herbs, used for seasoning, such as Sage, Thyme, Sweet Marjoram, etc., should be provided. Sow thinly, in rows a foot apart, and when large enough thin the plants to 6 inches, and transplant the thinnings, if needed. Finally—weed.

Flower Garden and Lawn.

See last months notes on preparatory work. If one begins operations this month, it is well not to attempt too much; make the best of what is found on the place; neatness and good keeping are always pleasing, and will compensate for lack of display.

The Lawn.—In case grass must be sown, or wait until next fall, prepare the soil thoroughly, and sow either Kentucky Blue Glass, Red-Top, or that variety of it called R. I. Bent, with about a quart of white clover to the bushel. On rich soil three, and on poor five bushels to the acre will be needed. Divide into two or three parcels, sowing each in a different direction. Roll well. Cultivators differ as to the utility of sowing oats with the grass seed; at this late season it will be well to sow a quart of oats with each bushel of seed, as the oat plants will then not be too thick, and will afford a much needed shade to the young grass. In making a new lawn, if possible, sod the margins next the roads, flower-beds, etc. If the plot is small and turf can be procured, sod the whole; lay it with care, and pat or pound it down well. Old lawns and those sown early will need mowing, and for this a

Lawn Mower is indispensable, on even a small place. Where there are so many good machines, we cannot advise one in preference to another. The machine should be used every 8 or 10 days, according to the growth; when mowed often the clippings may be left on the grass. Annual seeds will disappear before frequent mowing.

Perennial Weeds must be dug, pulled, or cut. Cutting with a knife or spud just below the surface will kill most of them. The English put a few drops of oil of vitriol in the heart of each plantain or other large weed. We have not tried it.

Bedding Out.—The plants used for making showy beds are almost wholly tender things from the greenhouse, and should not be set until the weather is settled. Give them rich soil, and if cold, sharp winds come, shelter them.

Cannas, Gladioluses, Tiger Flowers, and similar plants, should now be put out. A clump of cannas alone, set with reference to hight, is very effective. Set in deep rich soil, 3 to 4 feet apart each way.

Annuals from hot-beds and window-boxes may be transplanted, first hardening them by proper exposure. Sow tender ones in the open ground.

Perennials may still be set, as with few exceptions, they bear removal when well started into growth. See catalogues for kinds. Do not omit the garden phloxes for a gorgeous summer show, or chrysanthemums for a late one.

Dahlias may be set, and as soon as they need it must be tied to a stake.

Climbers add much to the beauty of a place; they may be used to decorate the veranda, or to screen fences or other objects it is desired to hide. We once saw a woodpile, that must remain in sight, converted into a "thing of beauty" by the free use of climbers, and looked like a wall of verdure and flowers. For varieties, see article on p. 185.

Evergreens may be set this month as well as any other, if caution be taken to keep the roots from drying. For a small place there are a number of dwarf sorts that may be used with fine effect. See catalogues. For screens or wind-breaks, Norway spruce and Arbor Vitæ are cheap and certain to grow.

Roses need attention as soon as growth begins. For the Aphis or Green Fly, syringe with tobacco water, or use the "dust" or sweepings of tobacco warehouses, sprinkling it freely while the dew is on. For the Rose-slug, whale oil soap is an old remedy. We are told that White Hellebore, used for currant worms (see "Kitchen Garden") is effective. Where the bushes are few, the slugs may be jarred off early in the morning, and killed. Rose-bugs, which spoil the swelling bud, can only be shaken off. Catch in a dish of water to which some kerosene is added, and kill. Roses may still be planted. They can hardly be overfed with manure, when well established.

Greenhouse and Window Plants.

These are apt to be neglected in the press of outdoor work. Window plants of the hardier kinds, that are not to go into the ground, may be set in the veranda, or other summer location. They will need care as to watering, and those making their growth should be shaped by pinching and pruning.

In the Greenhouse fire-heat will be needed only in cold storms; have the fire laid and ready for lighting when needed. Shading must be applied to the glass, common whitewash answering as well as any preparation. If put on by spattering with the brush, a partial shading will be secured, which may be increased as the sun's heat gets stronger.

Ventilate freely, and remove the hardier plants that are to go out during the summer. Many plants do quite as well if left in the house, and it is less the custom than formerly to strip the houses of plants. Those that are left will require extra care in watering and keeping free from insects.

Camellias and other thick-leaved evergreens should be set out in a shady place, but not under the drip of trees. Where there are many, a roof of lattice, of strips an inch wide and as much apart, may be made to set them under. Set the pots on boards or a layer of coal ashes, to keep out worms. Water and shade the pots from the sun.

Plunging is done with many summer-blooming greenhouse plants, and they serve to decorate the borders. Make a hole large enough for the pot, and put a layer of coal ashes at the bottom.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending April 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	265,000	289,000	1,711,000	47,000	304,000	674,000
23 d's *last* m'th	239,000	263,000	1,401,000	69,000	194,000	613,000
Sales.	***Flour.***	***Wheat.***	***Corn.***	***Rye.***	***Barley.***	***Oats.***
26 d's *this* m'th	334,000	1,265,000	2,307,000	53,000	257,000	896,000
23 d's *last* m'th	227,000	634,000	1,931,000	98,000	246,000	771,000

2. *Comparison with same period at this time last year.*

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1877..	265,000	289,000	1,711,000	47,000	304,000	674,000
27 days 1876..	281,000	1,062,000	437,000	31,000	198,000	783,000
Sales.	***Flour.***	***Wheat.***	***Corn.***	***Rye.***	***Barley.***	***Oats.***
26 days 1877..	331,000	1,265,000	2,307,000	53,000	257,000	896,000
27 days 1876..	329,000	2,014,000	891,000	68,000	264,000	971,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Apr. 10, 1877..	1,782,901	1,035,654	240,423	320,331	606,639	311,032
Mar. 5, 1877..	2,730,641	1,711,095	288,895	513,826	822,625	335,208
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Exports from New York, Jan. 1, to April 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush
1877....	357,887	2,093,192	4,275,668	378,689	121,229	48,491	115,211
1876....	569,514	4,994,177	3,668,928	43,320	——	63,894	258,251

Gold has been up to 106, and down to 104½, closing April 12, at 105⅞, as against 104⅝ on March 12; 106 on Jan. 12; 107¼ on Dec. 12, 1876, and 113 on the 12th of April. 1876.... The encouraging feature of business, this month, in the Produce line, is the notable advance in Breadstuffs, under the influence of the light offerings here and in the interior, the much more favorable foreign market advices, the decidedly active inquiry for supplies (largely for export), and toward the close the reports and rumors as to the probabilities of a great war in Europe, which quickened demand on the later days of the month under review, and led to a sharp rise in values, especially of Spring Wheat, mixed Western Corn (for prompt and forward delivery), and prime Rye, afloat. The dealings in Corn on Wednesday, April 11th, reached the very large aggregate of 650,000 bushels, about half of which amount was for April and May deliveries. Oats have found a very ready sale to the local jobbers, toward the close, at advancing prices. The whole position of the Breadstuff trade is deemed much more satisfactory, and the outlook quite encouraging. Of the purchases near the close were about 2,000 bbls. State Superfine Rye Flour, good to choice, at $4.90@$5.10, for shipment to Antwerp, the first important export movement reported in this article for a long time past....Provisions have been fairly active, but unsettled and lower as to values, closing, however, more steadily....Cotton has receded materially in price, under free offerings, and a less confident demand....Wool has been less sought after, and quoted weaker, and at the close generally heavy....Tobacco, Hops, Hay, and Seeds, have been in moderate request at the ruling figures....Ocean Grain Freights have been depressed and irregular, but closing somewhat stronger....Grain rates by steam to Liverpool closed on the 12th of April at 5*d.*, having rallied from 4*d.*; to Glasgow at 6*d.*; to London at 6½*d.*; to Liverpool, by sail at 5*d.*; London, by sail, 5½@6*d.* per bushel. Provisions by steam to Liverpool, 17*s.* 6*d.*@22*s.* 6*d.* per ton; Cotton by sail and steam at ¼*d.* ⅌ ℔. Grain, by sail, for Cork and orders, at 4*s.*3*d.*@4*s.*9*d.* per quarter.

CURRENT WHOLESALE PRICES.

	Mar. 12.	Apr. 12.
PRICE OF GOLD.	**104 5-8**	**105 7-8**
FLOUR—Super to Extra State	$5 35 @ 6 25	$6 25 @ 7 75
Super to Extra Southern	5 45 @ 9 00	6 40 @ 9 75
Extra Western	5 55 @10 75	6 85 @11 00
Extra Genesee	6 25 @ 7 35	7 75 @ 8 75
Superfine Western	5 35 @ 5 75	6 25 @ 6 90
RYE FLOUR	2 75 @ 5 00	3 00 @ 5 25
CORN-MEAL	2 65 @ 3 25	2 65 @ 3 50
WHEAT—All kinds of White	1 45 @ 1 60	1 60 @ 1 80
All kinds of Red and Amber	1 05 @ 1 60	1 25 @ 1 80
CORN—Yellow	56 @ 58	57 @ 60
Mixed	54 @ 53½	57 @ 60
White	57 @ 60	57 @ 60
OATS—Western	37½@ 48	42 @ 57
State	48 @ 56	52 @ 60
RYE	81 @ 91	85 @ 97
BARLEY	57½@ 1 05	57½@ 1 02½
BARLEY MALT	65 @ 1 25	65 @ 1 25
HAY—Bale, ⅌ 100 ℔s	65 @ 1 00	65 @ 1 00
STRAW, ⅌ 100 ℔s	50 @ 80	50 @ 75
COTTON—Middlings, ⅌ ℔	12¼@ 12⅜	11⅜@ 11½
HOPS—Crop of 1876, ⅌ ℔	7 @ 17	8 @ 17
" old, ⅌ ℔	4 @ 12	4 @ 10
FEATHERS—Live Geese, ⅌ ℔	45 @ 55	42½@ 45
SEED—Clover, ⅌ ℔	14½@ 16	14 @ 15½
Timothy, ⅌ bushel	1 90 @ 2 05	1 85 @ 2 00
Flax, ⅌ bushel	1 70 @ 1 75	1 60 @ 1 75
SUGAR—Refi'g & Grocery ⅌ ℔	8¼@ 10½	7½@ 10¼
MOLASSES, Cuba, ⅌ gal. 50 test	39 @ 40	32 @ 42
New Orleans, new crop, ⅌ gal	40 @ 56	38 @ 55
COFFEE—Rio (Gold)	17 @ 20¾	16 @ 20
TOBACCO, Kentucky, &c., ⅌ ℔	5 @ 8	5 @ 18
Seed Leaf, ⅌ ℔	4½@ 50	4½@ 50
WOOL—Domestic Fleece, ⅌ ℔	30 @ 52½	27 @ 50
Domestic, pulled, ⅌ ℔	20 @ 45	18 @ 42
California, spring clip	15 @ 30	12 @ 28
California fall clip	12 @ 23	12 @ 23
TALLOW, ⅌ ℔	7⅞@ 8⅛	7⅞@ 8⅛
OIL-CAKE—⅌ ton	— @34 00	33 00 @ —
PORK—Mess, ⅌ barrel	14 75 @ —	15 00 @15 10
Prime, ⅌ barrel	12 00 @ —	11 50 @ —
BEEF—Plain mess	10 50 @12 00	10 00 @11 50
LARD, in tcs. & bbls, ⅌ 100 ℔	9 50 @10 12½	9 00 @10 25
BUTTER—State, ⅌ ℔	18 @ 32	16 @ 32
Western, poor to fancy, ⅌ ℔	12 @ 32	10 @ 30
CHEESE	6½@ 16½	6½@ 15¼
BEANS—⅌ bushel	1 50 @ 3 25	1 50 @ 3 00
PEAS—Canada, free, ⅌ bush.	1 07 @ 1 10	— @ 1 10
EGGS—Fresh, ⅌ dozen	15½@ 17½	17 @ 18½
POULTRY—Fowls & Chickens	10 @ 14	10 @ 15
Turkeys—⅌ ℔	5 @ 14	10 @ 18
Geese, ⅌ pair	1 25 @ 2 00	1 25 @ 2 50
Geese, ⅌ ℔	7 @ 10	8 @ 12
Ducks, ⅌ pair	55 @ 1 25	70 @ 1 25
" ⅌ lb	— @ —	13 @ 18
Roosters, ⅌ ℔	6 @ 8	4 @ 8
Capons, ⅌ ℔	— @ —	18 @ 22
DUCKS, Wild, ⅌ pair	80 @ 2 00	15 @ 75
PIGEONS, wild, ⅌ dozen	75 @ 1 65	1 00 @ 1 75
SQUABS, per dozen	— @ —	3 50 @ 3 75
PLOVER, ⅌ doz	— @ —	1 00 @ 1 25
SNIPE, per doz	— @ —	35 @ 1 25
TURNIPS ⅌ bbl	50 @ 75	75 @ 1 00
CABBAGES—⅌ 100	— @ —	5 00 @12 00
ONIONS—⅌ bbl	2 75 @ 4 50	3 50 @ 5 00
LETTUCE, ⅌ bbl	— @ —	1 75 @ 3 25
POTATOES—⅌ bbl	2 75 @ 3 62½	2 75 @ 3 87½
new, Bermuda	6 00 @ 7 00	8 00 @ 9 00
SWEET POTATOES—⅌ bbl	2 00 @ 4 50	3 50 @ 5 00
SPINACH, ⅌ bbl	2 00 @ 2 25	2 00 @ 3 00
TOMATOES, new Bermuda, bx	1 25 @ 1 75	1 00 @ 1 25
BEETS, ⅌ crate	— @ —	2 00 @ 3 00
RADISHES, ⅌ 100 bunches	— @ —	1 50 @ 3 00
ASPARAGUS, ⅌ doz. bunches	— @ —	62½@ 1 00
BROOM-CORN	3 @ 7	3½@ 8
GREEN PEAS, ⅌ crate	— @ —	2 00 @ 4 00
CRANBERRIES—⅌ crate	— @ —	50 @ 2 50
APPLES—⅌ barrel	1 25 @ 2 00	1 50 @ 3 75
SQUASH, ⅌ bbl	1 25 @ 1 75	1 75 @ 3 00
PEANUTS, domestic, ⅌ bush.	— @ —	85 @ 1 25

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Mar. 19	10,627	42	1,284	20,081	21,952
Mar. 26	11,125	86	1,199	24,357	19,526
Apr. 2	9,069	77	1,622	17,399	18,703
Apr. 9	9,257	61	2,204	23,063	22,663
Total for 4 *Weeks*	40,078	256	6,309	84,900	82,844
do. *for prev.* 4 *Weeks*	34,237	449	3,338	72,741	70,201
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	10,019	66	1,577	21,225	20,711
do. do. *last Month*	8,582	112	834	18,185	17,550
do. do. *prev's Month*	9,337	106	727	22,103	20,347

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Mar. 19	9 @12¾c.	10 @11½c.	10½c.
Mar. 26	8¼@12¾c.	9¼@11¼c.	10¼c.
Apr. 2	8¼@12¾c.	9¼@11 c.	10¼c.
Apr. 9	9¼@12¼c.	9¾@11½c.	10½c.

Beeves.—With over 10,000 of the best cattle taken out of the market for export to England, we have still had but a dull and drooping market. What would have happened had these 10,000 head been added to the 30,000 sold, it is impossible to say, but no one doubts that the bottom would have dropped entirely out of the market. The foreign export now saves the live stock trade from utter disaster. Nothing is more certain than that. The whole month's business has been far from lively, and the advance of ¼c. ⅌ ℔ the first week, was more than lost immediately, and was not recovered at the close, when fair native steers, 56 ℔ to the cwt., sold for 10@10½c. ⅌ ℔; good cattle brought 10¾@11½c., and really prime beasts, of which there were plenty, 11@11½c. No extra cattle sold for over 12½c. ⅌ ℔, estimated 58 ℔ to the cwt....**Cows.**—The market has ruled dull all through the month. Strange to say, although the Board of Health has, by numerous successful prosecutions, compelled milkmen to sell milk without mixture of water, yet the demand for cows has fallen off. A large supply of country milk keeps the trade in city milk at low water. By and by it may turn out that the city "Orange Co." dairies based largely on swill, may need no more cows, "a consummation devoutly to be wished." Few cows have brought as much as $60, the range has been $40 to $50 for common, to $55@$65 for good to extra.... **Calves.**—Weakness has afflicted the veal market. The supply has been too great for the demand, and 7c. is the limit offered by butchers for the best. Poor little veals from a week old upwards, and of the "bob" character, have sold in large numbers at $3@$4 each. Fair veals have brought 6@6½c. ⅌ ℔, and the best picked lots occasionly have gone as high as 7½c. ⅌ ℔ live weight.... **Sheep and Lambs.**—Trade has been slow and easy for all except the best fat sheep, which have been picked up freely for shipment, 2,000 head thus went in the last week. Most of the business was done at 5¾@6½c. ⅌ ℔ for ordinary, 6¾@7c. for good and the best, a lot of 131-℔ fat sheep, very fine, from Steuben Co., N. Y., brought 8¼c. ⅌ ℔ live weight....**Swine.**—There is nothing worthy of note in hogs, except that live Ohio hogs, 184 ℔s., sold the last week for 5⅝c. ⅌ ℔, and city dressed at 7@7⅝c.—small pigs brought 7½c.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ℔	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ⅌ ton..	$56.50
do. do. guaranteed, ⅌ ton, cargo C	56.00
do do. rectified, per ton, 10 p. c..	66.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
" Potato do do do do	25.97
" Turnip do do do do	19.36
" Fine Bone, strictly pure........ ...per ton	40.00
" Dissolved Bone, 15 per cent........ do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.00
" " Dry g'd Fish Guano, ton 9 p. c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton........	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton..........	8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (80 per cent) per lb..........	4 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2½c.@ 3 c.
Nitrate of Soda, per lb........................	4¼c.@ 4¾c.
Sulphate of Ammonia (25 per cent.), per lb....	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia.	$3.00@ $ 4.00

Artificial Fertilizers—What Farmers are Doing.

Probably never, since artificial fertilizers were known, have they been used so intelligently as they are being, and will be applied this year, and it is safe to say that more will be added to the general knowledge in relation to these fertilizers than ever before. The *American Agriculturist* can fairly take to itself a good share of the credit in producing this state of affairs, as nowhere else has the matter of fertilizers been more thoroughly discussed, and the principles upon which they should be used more clearly explained, than in these columns. Especially have the articles of Prof. Atwater, seconded by those of the Editors, pointed out to farmers the only way in which they can learn the deficiencies of their soils—by experiment; they have given the constituents of plant food most likely to be lacking, and indicated the most economical and available sources whence these can be obtained. It has been shown that it is a waste of money to apply a complete manure, when potash only is needed, and that it is equally useless to add ammonia when the one thing needed for a paying crop is phosphoric acid. Farmers, and cultivators generally, have made an important step in learning that there is no more one universal fertilizer, than there is a universal remedy for disease; and a still more important step in determining to ascertain for themselves, by careful experiment, what they can most profitably employ. There is another thing relating to fertilizers in which the *American Agriculturist* has done its share, viz: the pointing out the commercial forms in which the essentials—nitrogen or ammonia, potash and phosphoric acid—may be bought, and their prices. We must admit that our efforts in encouraging experiments with fertilizers would have borne little in the way of practical results, had they not been seconded by the dealers in fertilizers. It is greatly to the credit of the respectable houses in this business, that they offer to sell by actual analysis, and guarantee that the article they offer shall contain exactly the elements, and in the quantities represented. It is possible for the farmer now to do, what a short time ago was so difficult that it was well-nigh impossible, *i. e.*, order just such amounts of plant food he may desire, in the cheapest or most available form. If he wishes to test the value of any formula upon his land, it can be put up he directs. If he wishes to have at hand in stock, phosphoric acid, potash, and nitrogen, that he may test them singly or in various combinations, he can buy the articles containing them, of high grade or low, as he may prefer, knowing that he will get just what he pays for. A reference to our advertising columns will show that dealers, as a general thing, offer their fertilizers as warranted to contain a given percentage of the valuable constituents, and a perusal of the circulars sent out by the makers of, and dealers in these articles, shows that they assume that the purchaser knows what he wants, and will buy intelligently. The day for secrecy in fertilizers is over.

Just 2 Months More.

IMPORTANT.—The Publishers of the *American Agriculturist* employ no agents; the high cost of making the paper and its low subscription price do not admit of this. But they do offer something in the way of recognition, or remuneration, to friends who take the trouble to show the paper to those not acquainted with it, and receive and forward their subscriptions. This assists the Publishers, and is beneficial to those solicited to subscribe. The remuneration is given in the form of highly useful and always valuable articles, which are named and described in a Premium List, a copy of which is supplied to every one desiring it.—The articles offered *are first class, and just as good as money*, though by special arrangements, and large wholesale cash purchases, they cost the Publishers less.

This list of Premiums is **open to all** until July 1st, when it will be positively withdrawn. There are therefore just **2 months more** in which those who have begun lists may fill them out. . ☞ Those who have struck for a larger premium and have not succeeded in getting that, may select a smaller article, and complete their list to get that one. There is

Plenty of Time Yet to fill out lists in progress, and to begin new lists, and complete them during May and June. (A lady begun the second week in May and procured subscribers enough within one month to secure free a **$650** Steinway Piano.—A farmer in three weeks secured a Buckeye Mower free in the same way, without neglecting his work; and many others have in like manner got large and valuable premiums in a short time in May and June.) There is a large list of good articles to select from, varying all the way from $1 to $650 in value, given free, for from 3 subscribers up to hundreds.

Over **18,000 persons** have received these valuable premium articles **free of cost.** Reader, Try it this month. A little effort now will secure you one or more valuable articles the present season, and the practice thus acquired will pave the way for getting hundreds of dollars worth next year.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German edition of the *American Agriculturist*. It contains not only the Engravings, and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other one contains so much useful information, or a tithe of its engravings. The Germans are a reading, thinking people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners, and all would find it pay to do so.—Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc., because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond a couple of German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ Please call the attention of your German neighbors to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. . **Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (50 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time at the club rates, if new members begin at same date as original club.

TRY THE NEW POTATO.—In our last number we described the most promising new variety of Potato this year, and offered some seed. We have sent parcels to several hundred different localities during the past month, from which we hope to have excellent reports in autumn. Those who plant half a pound or more, with the care in cultivating, etc., as described on page 127, will be likely to have seed for a large planting next year, and thus be ahead of all their neighbors, as there was not 50 bushels for the whole country this year. If this potato proves as valuable as it is hoped it will, the product of a single pound will be worth $50 to $100 for planting next year. It is certainly worthy of a careful trial. It can be planted during the first part of May, and even up to the 20th, or later in Northern localities. At the time of writing this, the prospect is that we shall have some 400 to 500 parcels to distribute, after May 1. We therefore continue the offer of last month, viz: **To any present Subscriber sending one new subscriber to the "American Agriculturist" for 1877, at the regular price of $1.60 a year, the Publishers will send, postpaid, two of the SUPERIOR POTATOES or one half pound; and to any one forwarding TWO subscribers as above, they will send 3 parcels or 1 1-2 lbs. of the Potato; and in the same proportion for more than 2 subscribers.** (Names for this premium count in no other list. and it will only be given to those sending names specially for it.)

A Pocket Microscope ought to be in every house as a source of rational amusement and instruction; to examine plants, insects, and multitudes of objects too small for the unaided eye. *Abbott's* Pocket Microscope, costing $1.50, and serving a good purpose, will be presented, and sent securely packed, post-paid, to any one forwarding four subscribers to the *American Agriculturist*, at $1.60 a year.—The "*Excelsior*," costing $2.75, a more complete instrument, will be presented to any one sending seven subscribers. It will be delivered free. Any boy, or man, will be abundantly rewarded by one of these instruments for the trouble required to find and forward four or seven subscribers.

Look into the "BAZAAR."—We know no better designation than this, for the fine display, by good parties, of the great variety of seeds, plants, implements, machinery, and many other things, that are set forth on the second cover and some other pages of this Journal. One can there learn, without going from his fire-side, concerning a multitude of articles and enterprises. Those in charge of that department are instructed to "admit no quacks or quackery, and only those who have the ability and the intention to do what they promise to do in their advertisements." Our readers will find it profitable to take a stroll all through this department, not only to find the best places to get what they want, but also to gather useful business hints by seeing what others are doing, what they say, and how they say it. It is always well when corresponding with these men in ordering, inquiring, sending for circulars, etc., to inform them that you made their acquaintance through the pages of the *American Agriculturist*; it will do no harm, and may be of double advantage.

Very Handy to Have, is the "*Pocket Tool Holder*," for a hundred little jobs. A hollow handle contains 20 small cast-steel tools—awls, chisels, punches, screw driver, etc. Any one of these is quickly adjusted in the end of the handle, ready for use. One will be sent free, post-paid, to any person remitting three subscribers for the *American Agriculturist*, at $1.60 a year.

To Puzzlers Young and Old.—Last month, page 146, Aunt Sue gave a "Prize Enigma." In making up the page, an "Illustrated Rebus" was placed in the same column with her offer, because there was no more convenient place for it. Many who are working for her Enigma Prize, think that this Rebus is included with it. This Rebus has nothing to do with Aunt Sue's Enigma. Read her article just as if this was not there.

More Potato Premiums.—Messrs. Hawkins & Cornish, Seedsmen of Goshen, Orange Co., N. Y., last year offered premiums for the greatest yield from one pound of seed of their Mahopac Seedling Potato. The largest yield was returned by H. C. Pearson, Pitcairn, St. Lawrence Co., N. Y., who obtained 1,994 lbs., or 33¼ bushels, from one pound, and received the highest prize, $50. The amounts reported by four others were: 1,877, 1,774, 1,528, and 1,278 lbs. respectively. The catalogue of Messrs. H. & C. gives the modes of culture. The Mahopac was raised from the seed of the Garnet Chili, crossed with the Prince Albert; is medium late, light rose color, and great excellence, as well as productiveness is claimed for it. They have other specialties in the way of potatoes, not offered elsewhere.

Any Boy Wanting a Good Pocket Knife, can secure one of first-rate quality, sent to him by mail, free of all cost, with 3 good blades and buck-horn handle, by stirring round among his friends with a copy of the *American Agriculturist*, and geting four of them to subscribe for a year. The exercising of his business talents in this way, will do him good; he will get the good knife; and the four subscribers will be benefitted by having the paper. (Six subscribers will secure an extra four-bladed knife, with pearl handle: or a lady's beautiful pocket-knife, with four blades and a shell handle). N.B.—These knives are not poor, soft, or brittle things, made for show or "to sell," but first quality, A, No. 1 articles made to use.

"The East India Tree Pea."—This is being generally advertised, and numerous inquiries are made concerning it. As nearly as we can recollect, this is advertised in almost exactly the same terms that were used a few years ago in describing the "Japan Pea." If, as we suppose, this "East India Tree Pea" is the same as the "Japan Pea," a description of it will be found in the *American Agriculturist* for Feb., 1874, with an engraving of the leaves and pods. It may be useful as a fodder plant in the warmer States, but for human food, nearly worthless, green or ripe. It is not a true pea.

There is no Questioning the Fact that any Farmer who has a small library, even if it be but half a dozen good books, treating about his own business, will feel himself more of a man, will have more dignity of character, will be more respected by others, and respect himself and his calling more; and the same effect will be produced upon his entire family. Then again, he will think more and better; and there are few books so poor that they will not give him some new thoughts, hints, and suggestions that will lead to more profitable practice, so that in the end he will receive back five, ten, twenty-fold, the cost of the books. We wish every farmer could see, as we see it, of how much value it would be to invest $5, $10, or better, $20 in securing a small library, no matter how great a sacrifice in some other direction, or how great the effort it may cost. The mail now brings books to every man's door. We *know* that every man who will follow our advice, and get such a library now, will in less than three years warmly thank us for urging him to do so. There are many good books advertised now. To any one desiring it, we will be happy to offer advice as to a selection, if he will state his circumstances, what he has read, etc.

War—Push in One Acre More.—At this writing (April 16) every indication points to a great war in Europe, to commence between Russia and Turkey, but likely to extend to other nations. This will involve the great granery of the lower Danube, and lead to a much larger demand upon this country for many farm products. While we deplore war, it is well for our farmers to push their productions to the highest point, not only by careful cultivation to increase the yield, but by getting in every additional acre possible this spring.

The Grasshopper Commission.—Congress made an appropriation, and commissioners have been appointed for a thorough investigation of the Locusts, or grasshoppers, and the means of preventing their devastations. The gentlemen appointed are Prof. C. V. Riley, of Mo.; Prof. Cyrus Thomas, of Ills.; and Doct. A. S. Packard, Jr., of Mass. These gentlemen have already taken the field in different parts of the far West, and will no doubt get at the "bottom facts" concerning this scourge. The question naturally suggests itself, What is our Department of Agriculture for? Here is a work that belongs eminently to that Department, put in the hands of others. Is not the present Commissioner competent to direct such an undertaking, or is he so busy in sending out seed that he has not heard of the grasshoppers?

Special—The "Book Acre."—Knowing, as we do, the great advantage of good books to every farmer, we offer the following suggestion: Select one acre in addition to what is now planned for, label it the "BOOK ACRE;" cultivate it at odd hours, and resolve to invest the proceeds in good books on farming. It will be the best paying acre, on many farms, that was ever grown. *Try it this year.*

A Thing Worth Doing.—If any farmer will get five of his neighbors to join him in subscribing for the *American Agriculturist* for the present year, at the regular rates of $1.60 each, (or six others if he is himself a subscriber now), the Publishers will send as a present a copy of Allen's "New American Farm Book," (price $2.50), post-paid. This valuable book is full of useful information, and it can be passed around and consulted and read by all of the six or seven persons, and make a good beginning for a farmers' Circulating Library. The cost to each, at $1.60 a year, which pays for postage also, will be only 3 cents a week. Surely a copy of the *American Agriculturist* in each household a whole year, and the use of this large instructive book, will richly repay so small an investment. It will pay.

OR.—If impossible to get the six subscribers named above, let four subscriptions be made up, and select one of the $1.50 books from the list on third cover page of this number, say Henderson's "Gardening for Profit," or "Harris on the Pig," or Stewart's "Shepherds' Manual," or Thomas' "Farm Implements," or Waring's "Draining for Profit." Any one of these books circulated and read, will be of great usefulness.

Wide-a-Wake in Australia, New Zealand, Bermuda, etc.—The following pleasant bit of commendation comes in a letter from a gentleman well known in the scientific world, who is passing the winter and spring in the Island of Bermuda: "I was riding, the other day, with a well known English naturalist, along a quiet country road. We were passing one of the pretty little cottages peculiar to Bermuda, but which showed more than ordinary taste in its surroundings. The snow-white limestone walls were covered with vines, a graceful hedge of pigeon-bush concealed the out-houses from sight, while between the cottage and the road was a level well kept lawn with neat borders, dotted with choice shrubs: the gorgeous scarlet-bracted Poinsettia, the elegant "Flambeau," (*Poinciana pulcherrima*), cycads, shell-plants, and such a profusion of roses as only Bermuda or South Carolina can show. My friend exclaimed: 'What a neat little place; those people must surely take in the *American Agriculturist.*'—I asked him why he thought so, and he replied, 'Why anywhere in Nova Scotia or New Brunswick, where you see a house the clean and neat appearance of which shows that the owners take pride in having a pretty place, you may be sure that they take in the *American Agriculturist.* I have remarked it very often in driving through the country. It is a most wonderful paper. I never read a number without getting several useful ideas, and it has put us up to no end of new contrivances. I send it occasionally to friends in England, who are greatly pleased with it; they say there is nothing like it in Europe.'—So you see the *American Agriculturist* is appreciated abroad as well as at home."....This Journal is *the* Agricultural paper of *Australia.*—It would be almost a novelty for a mail to arrive from that country that did not bring us a considerable batch of subscribers.—*New Zealand* seems determined not to be behind her neighbors in securing the benefit of Yankee ideas and improvements. Yesterday came a remittance for 92 subscribers, which follow hard after previous orders for 66 copies, 21, 30, 34, etc.

Potash as a Fertilizer.—The last of the series of useful circulars sent out by the "Mapes Formula and Peruvian Guano Co." is devoted to a discussion of Potash in its relation to agriculture. This circular is none the less valuable from the fact that it is largely made up of extracts from Prof. Atwater's articles, which appeared in the *American Agriculturist*, due credit, of course, being given. The matter relating to potash, which the reader would have to hunt up through many months, is here brought together in a compact, useful form, from which one can learn more about the uses of potash and its cheapest sources than he is likely to find elsewhere.

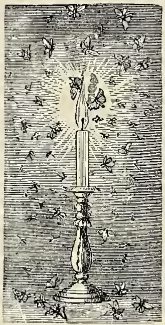
The Uses of Rhubarb.—"T." says: Having an abundance of rhubarb as one will have who has any plants at all, we in former years noticed that after a few pies in early spring, the novelty having worn off, the rhubarb was rarely used. An inquiry at "headquarters" revealed the fact that rhubarb was so juicy that the pies would "stew over" into the oven, that the juice prevented the "bottom crust" from baking properly; "no one cared for the pies after the first ones," "so much sugar," and other things, which we do not now recollect, but to all of which we made answer—"Brown Betty." The suggestion was followed, and thereafter a rhubarb Brown Betty became one of the institutions of the family. To "B. B." you need breadcrumbs, rolled, but not fine, the size of split peas, more or less; rhubarb, cut small; sugar, cinnamon, or other spice. Put a layer of crumbs in a pudding dish; a layer of rhubarb, some sugar, spice, more breadcrumbs, and continue alternate layers of rhubarb and crumbs, sweeting and spicing each, until the dish is full, or the material used up, finishing at the top with crumbs. Bake until the rhubarb is done and the top well browned. Following this hint, sufficient crumbs were added to the rhubarb to absorb the juice in making pies, to their great improvement. The rhubarb now gets used—if any doubt it, let them look at the grocer's bill for sugar!

Sweet Potato—"Early Peabody."—The description of this new sweet potato in March last, has called out inquiries as to where it could be procured. Mr. Peabody informs us that he has sent a stock of seed potatoes to Messrs. James M. Thorburn & Co., 15 John St., N. Y., who will, no doubt, be able to furnish plants at the proper time. Our experience shows that near New York the first week in June is quite early enough to set the plants; those put out earlier may live, but they make little growth until the weather gets "settled warm."

The National Repository, "A Christian Magazine," devoted to "general and religious literature, biographies and travels, criticism and art," is one of the best family magazines that comes to our table—94 pages per number, beautifully printed, and well illustrated. Edited by Dr. Curry, formerly editor of the "Christian Advocate." Published by Hitchcock & Walden, of Cincinnati. $3 per annum. Those desiring a first-class magazine—and what family does not?—will find this a safe, instructive, high-toned periodical.

Sundry Poultry Matters.—Health of Fowls.—"Subscriber," Ironton, Mo. To preserve a flock of fowls in robust health, it is advisable to change the male every year. This is easily done by procuring a change of eggs, and raising a brood of chicks of other stock....**Crossing Breeds.**—To cross a Light Brahma with a White Leghorn would be undesirable. There is nothing about the Leghorn that can improve the Brahma, and if the Brahma improves the Leghorns, it can only be by adding size, and producing a mongrel which will probably be quite unsatisfactory.....**Turkeys.**—To have two broods of turkeys in one season, take the poults from the hen turkey as soon as they are hatched, and give them to a hen with a brood, or take the eggs from the hen turkey after she has set upon them for a few days, and put them under a hen. The turkey will then lay another litter of eggs, and needs no visit from the male turkey to fertilize them....**Incubation of Eggs by Manure.**—In reply to a number of enquiries, we would say that unless a person has practical knowledge of the behavior of fermenting manure, and how to so manage it as to keep a steady heat, it is more than probable that an attempt to hatch eggs in this way would fail. We would not advise any lady to undertake this business, unless it be done very cautiously, and with a few eggs at a time. To risk a hundred eggs, without having experience, is unwise, and would almost certainly lead to failure.

Sundry Humbugs.



Very few who read the articles with the above heading are aware of the difficulties attending the preparation of them. It often requires a great deal of correspondence, or much time to be spent in investigation by trustworthy parties, before we can be sure of a statement which, in the giving, may occupy but a few lines. In conforming to the rules we long ago established for our guidance—to spare no one, no matter what his position, whom we know to be a swindler, and at the same time to place no one in the select company of Humbugs, without being morally certain of his right to this distinction—we must, of course, spend a great deal of time in investigating the cases which appear here, but still more on those against whom the evidence is insufficient. There are many schemes which we feel quite sure are fraudulent, and persons whom we believe to be swindlers, that escape simply because we are unable to confirm our suspicions. A marked illustration of the difficulties attending such investigations is the case of

"THE SILVER MOUNTAIN MINING COMPANY,"

the circulars and pamphlets of which were a short time ago scattered broadcast over the country. The pamphlet was no more objectionable than such things often are, but the circular sent with it was too much after the style of some bogus concerns, to pass unsuspected. As the Company had its headquarters in New York, inquiry was made of parties who should know all about it. The information received was embodied in an item given last month on p. 129, which, while it did not put the concern down as fraudulent, should have caused any thinking person to hesitate before risking his money in it. Soon after the April number was out, numerous inquiries moved the police authorities to investigate the matter, and they ascertained that the names which our informant regarded as sound, were fictitious, and that the affair was for the purpose of "defrauding easily deceived people." It is very certain that any

PROBABLY PROFITABLE ENTERPRISES

have no need to resort to any such methods, to enable them to start operations. There is money enough at all commercial centres awaiting investment, and any enterprise that promises fair returns without unusual risks, can easily command capital....Lotteries and the various tricks and games connected therewith, appear to have subsided somewhat since the arrests mentioned in our last, but the business is too profitable, and there are too many heavy capitalists engaged in it, for it to be abandoned. That form of lottery, in which articles, such as musical instruments, jewelry, etc., are offered, instead of money, are still operating.

"THE MERCANTILE PRIZE ASSOCIATION"

is one of these about which there are serious complaints, and is a good (or rather bad) specimen of the lot. We sometimes think that we have little pity to waste upon those who are simple enough, after all the warnings that we have given, to be caught by these games, but every now and then there occurs a case in which the losers are so much in earnest, and to whom the loss seems such a hardship, that, while we are disposed, from principle, to say, "sarved 'em right," we are, at the same time, sorry we can not help them. Here are two letters, both from Indiana, one from a German who understands no English, and the other from the father of a young lady, both persons being victimized to the same amount, viz., $7.50. The plan is to send a ticket informing the recipient that the ticket has drawn a prize, in both these cases a Melodeon; the price of the ticket is $1, and the one to whom it is sent is informed that by forwarding this and $6.50 for "expressage and packing," the ticket "entitles the holder to a Melodeon valued at $125." In both these cases the money was sent, and in both, of course, the melodeon wasn't. This "Prize Association" has as many names and addresses for its officers as a dealer in counterfeit money. One circular is dated far up in Broadway

—among the thousands, and the other at 234 Broadway. If one would look up 234 Broadway, he would find that Uncle Sam has gone and set the immense pile of granite he uses for a Post-office, squat upon the very place, and the shop can not be found so long as that building stands in the way. Of course, these and others who have sent money for melodeons, have placed it beyond recovery, but if it will teach them to let alone hereafter all lotteries, by whatever name they may be called, it cannot be regarded as altogether lost. But how about the express companies who play into the hands of these swindlers—are they altogether blameless?—....While there are some schools for teaching telegraphy, or in which it is taught with other branches that have an excellent standing, there is no doubt but

INSTRUCTION IN TELEGRAPHY

is made the medium of swindling operations. We have during the past few years had a number of complaints of these "Telegraph Institutes," that seem to bear every mark of truthfulness, but as they rest solely upon the assertion of unknown individuals, we cannot make them the basis of a specific charge. The most recent complaint comes from Freeport, Ill., in which a young man states that one of these Institutes opened in that place, that he, among others, including several young ladies, paid their fee, $40, in advance, and then the instructor, claiming that he had a right to do so, moved his "Institute" to a place in Wisconsin, whither his students, having paid all their money for tuition, were unable to follow him, and lost both their money and the time they had spent in getting partial instruction, while the teacher had put himself beyond the reach of legal proceedings. The complainant sends his "Certificate of Membership," upon the back of which are the "Rules and Regulations." The 9th of these reads: "It is further understood and agreed to by the person holding this scholarship," that the managers of the Institute "are at liberty any time to move their school to a point more convenient."... "Said change to be made at the discretion of the managers."—This looks very much as if introduced for no good purpose, and we advise all who are tempted to join any such school, to look closely into all the conditions before paying their money in advance.... Our caution to farmers to

BE CAREFUL WHAT YOU SIGN,

should be printed in large letters and put up in every farm house. Indeed it is not needed by farmers only, but should be observed by all. We repeat it now because the sharpers are likely to be on the road more thickly than ever. The counties of Putnam and Rensselaer, N. Y., have been in a state of excitement over patent corn-shellers—or rather over notes given for the same. Men who have been regarded as shrewd, have been taken in by still shrewder agents. It is not necessary to state details, further than to say that in some cases the agent wanted a note for the shellers, to show "the company" that they had been properly placed. The note should not go out of his, the agent's, hands, and to show how safe it would be, it was written on the note "Not Transferable." Others signed a paper, "just for form's sake," you know, accepting the agency. All was lovely for a while, but in time the "Not Transferable" notes turned up; they had been transferred—as why should they not be? Did each one not plainly read "Note Transferable!" It was so e-asy to add an e. Then the papers accepting the agencies, turned out to be notes pleasantly disguised. It is some comfort to know that at last accounts one of these chaps was in jail, and it is a pleasant reflection that in these counties, there being several shellers to one corn, farmers have discovered that they can be converted into capital feed-boxes for cows. Beware of signing any paper whatever for any lightning-rod, corn-sheller, patent medicine, or other vender. It is not safe to write down your name and address in a book for some of these chaps.

MEDICAL MATTERS

are unusually without novelty. There is a good deal of small-fry advertising in the papers; but the real touching, heart-rending pamphlet-account of miraculous cures is quite scarce. One thing, however, is quite too frequent. We have tried to state plainly and explicitly, that it is of no use to write to us, asking about advertising doctors. There are now some 20 letters or more, each containing an advertisement cut from some newspaper, asking what we know about the person, or what is our opinion of their medicine. Many would save themselves the trouble of writing, it they would recollect that we know nothing whatever—at least nothing good,

OF ANY ADVERTISING DOCTORS,

and our only opinion of their medicine is that it should be let alone most severely. We can not answer such inquiries individually, we have not the time, and we hope that this general answer may give us freedom from such applications for a while. We make no exceptions whatever, no matter how many titles the advertiser claims, how many cures he has made, or how many or what kind of certificates he prints. Have nothing whatever to do with them. We wish we could write a little plain language to young men, that we could show them how needlessly they were frightened into employing quacks. Be careful how you put your name or your money into their hands....We thought that the Sawbones at their surgical shop in Indiana were ahead of all similar "Institutes" in the repulsiveness of their circulars, but here is another "Institute," this time in Kansas City, which "piles up the agony" much higher. Such a lot of figures, with limbs and bodies distorted in every possible form—all in a row, looking like a set of Crandalls "Acrobats" struck by lightning; such portraits of women with faces eaten by cancer; such wens, such diseased eyes, and almost every deformity and disfigurement that can befall poor male and female humanity, we have rarely seen. Nervous people should not look at this circular, and all others should let it alone, lest they become nervous. The people at this "Institute" warrant cures, like other quacks. This concern goes systematically into business. It sends out circulars which contain a list of all sorts of diseases, and the one who receives it is requested to give the names of all his friends and neighbors who are afflicted with a mark to indicate the disease. Moreover, there is a blank on the other side, with a request to "give here the names and post-office addresses of all the school teachers you know of." People wonder how the humbugging chaps get their names!....As we opened one circular, there met our eye in large type,

"DIRECTIONS HOW TO GAIN WEALTH! HOW TO KEEP IT! HOW TO ENJOY IT!"

Here was something worth while—not only to gain wealth, but to keep it, and enjoy it—to eat your cake, and have it, too! What wonder that we looked at it with interest. We read: "To gain wealth that will last, it must be earned."—We agreed to that. Further we read: "I would enjoy myself more in giving a dollar, than deprive any one of a cent."—We began to feel a respect for this man. Glenn it is his name. Slightly crooked as to grammar—but one can't expect high moral qualities, faultless grammar, and be set out on the road to wealth, all at once. But we grew impatient as to the wealth. We read—and, at last, there it was: To gain wealth, one must sell—groceries? No. Dry-goods? No! Attleborough jewelry? Still no! Nothing less than

"PEACE IN THE FAMILY!"

The same old story, to get wealth, one must give up something—not only his own peace, but, alas, "Peace in the Family!" We would have no more of it—better be poor with "peace in the family," than wealthy without it, thought we, as we were about to throw the circular aside—when our eye caught the words: "Peace in the Family is put up in three sizes—oval-shaped bottles"—and, after all, it was only a miserable quack-medicine—and making, keeping, and enjoying a fortune, all vanished. But the things this stuff is good for: from a jumping toothache to the most dangerous diseases of females! Glenn, you are a genius! We agree with you in one statement, though not in the sense you intend it: "No family of Children is safe without Peace in the Family!"—"Let us have peace."

The Colorado Potato Beetle.—Unfortunately, but few readers in the Northern States need be told of this insect and its work. Still, there are localities which it has not reached, but where it may be expected, and while we give those to whom it is new something of its history, we may also remind others to be on their guard. The insect is in shape like a large lady-bug, of a tawny yellow color, with 12 black lines on its back. It usually has three broods, the last wintering in the ground, as "seed" for next year's crop. They come out of the ground as soon as the potato sprouts do, and lay eggs on the under side of the leaves; they hatch in a week; in the larva, or grub stage, they are reddish, and very small, grow rapidly, and soon become fat, repulsive-looking grubs, of a reddish yellow, with black spots; when full-grown, they enter the ground, become pupas, and in a week came out as perfect beetles. These provide at once for another crop. The perfect insect flies, and thus spreads from place to place. Both the perfect beetle and the grubs eat, and so voraciously that, unless checked, they will completely destroy the potato vine. When the vines are small and the beetles few, much may be done by hand-picking, and at the same time crushing the eggs, which are small and yellow and upon the under-surface of the leaves.

Later, when the insects come from elsewhere, and get too numerous, apply Paris green. Get the pure article and mix thorougly with 20 parts of flour or plaster, and sprinkle it by means of a perforated tin-box or other contrivance, upon the vines, using very little—only so much as can be seen. Or the Paris green may be mixed, one tablespoonful to a pailful of water, stirred thoroughly, and the vines sprinkled with it, using a watering pot, syringe, or even a whisk broom. The poison does not dissolve, but must be kept suspended in water by stirring. There are numerous contrivances, patented and unpatented, for applying Paris green in the dry state and mixed with water; one of the most recent of these is the "Liquid Atomizer," made by the New York Plow Co., No. 55 Beekman street, New York, which it is claimed will distribute the poison with great thoroughness. Those who have last year's volume (1876) will find in July and August very full accounts of the insect, and useful suggestions for applying the poison. The most complete history of the insect is given in a work by Chas. V. Riley, entitled "Potato Pests," and published by the Orange Judd Co. (50c., paper covers; 75c., cloth). Other insects injurious to the potato are also described, and the natural enemies and methods of destruction are given, and all fully illustrated. It is a work which every potato grower should have and study.

"Home Building" is the title of a new work on architecture, with 45 designs of various styles. A distinguishing feature of the work is its specifications, its elaborate table of the cost of materials in different parts of the country, and descriptions of over 250 cities, towns, and villages, from New York to San Francisco. The book embodies a vast amount of information of a kind not readily to be found elsewhere. Sold by the Orange Judd Co. $5.00.

The Land and Game Birds of New England, by H. D. Minot. This is a popular work, intended for young persons who would like to know something about birds, and care but little for ornithology as a science. The descriptions are divested as much as possible from technicalities and the work largely devoted to that in which most other works are deficient—an account of the habits of the birds, which are given in a familiar style. It gives a key by means of which a given kind may be identified by its color alone. As the birds included in it have generally a wide range, the work will be found useful outside of New England. Published by the Naturalists' Agency, Salem, Mass; post-paid for $3.

Making the Most of a Potato.—Last month, on p. 127, we gave an engraving showing how to cut a potato in such a manner that each eye will make a "set," with sufficient of the tuber attached to it to nourish the young plant. It should have been stated that this engraving was reduced from a larger one in the Illustrated Potato Catalogue of B. K. Bliss & Sons, 34 Barclay St., N. Y., which contains much useful information about potatoes and their cultivation.

"Ashton Factory Filled," is a brand of salt in the highest repute among dairymen and others. Inquirers for this are referred to the advertising columns.

Ashes for Apple Trees.—"S. L. B.," Tompkins Co., N. Y. Ashes are an excellent fertilizer for a young orchard. It is not advisable "to apply them close around the trunks to prevent worms from injuring them."—Their effect in keeping off the parent insect of the borer, which is no doubt what you mean by "worms," would be only mechanical, and it may be accomplished much more surely by a strip of tarred or other paper. Strong unleached ashes might injure the bark of a young tree; at all events, applied just there, they would do very little good, as the feeding roots are at a distance, and the best use of ashes will be to spread them, if in abundance, all over the orchard, or if the supply is limited, around each tree as far as its branches extend.

The Tobacco Trade Directory, just issued from the office of "The Tobacco Leaf," a trade journal edited by Edward Burke, 142 Fulton street, New York, is a curiosity in the way of a special Directory. It claims to give the name of every person connected with the tobacco trade in the United States, Canada, and the city of Havana, and while it is a wonder to outsiders, must be very useful to those interested.

The American Veterinary Review.—The first number of the first volume of the second edition of the "American Veterinary Review," is received. It is edited by Dr. A. Liautard, and is issued in accordance with a resolution passed at the last meeting of the United States Veterinary Association. The number before us contains papers by Dr. Liautard, Prof. James Law, Prof. Very, and others, upon subjects of importance to the owners of horses, cattle, sheep, and swine. Unfortunately, capable veterinarians are very scarce where they are most needed, and the immense numbers of live stock, which reach a value of not far from two thousand millions of dollars, are either helpless in the owner's hands, or are submitted in great part to the treatment of quacks and cow-doctors. In the hands of an intelligent farmer, a veterinary work of this character will be valuable, and when helped out with some standard works, may greatly aid him in rationally treating his own animals in the absence of proper professional help.

Marketing Produce. — The produce commission business is one that offers a field for dishonest operators, and we would caution those who send vegetables, fruit, or other produce to the New York and other markets, to be careful to whom they consign it. There are two classes to guard against; those who start with good intentions, but who for want of sufficient experience soon fail in their undertaking, and those who start with the deliberate intention of cheating. Already circulars of a suspicious character are being sent among the producers, and soon the fruit growing districts will be beset by numerous glib-tongued persons, who have a plenty to say, and a plenty of time in which to say it, as to their wonderful facilities for handling and selling fruit. Raising fruit and other produce is of little avail unless it is well sold, and as it is seldom that one person can do both, it becomes necessary for the grower to entrust his articles to another, to whom he pays a commission for selling. It needs no argument to show the importance of selecting a commission merchant who is not only thoroughly honest, but has such a knowledge of the business as will allow him to get the best prices. There are numerous dealers of this class, some of whom advertise in our columns, and as to others, it will not be difficult to ascertain their reputation. It is very unsafe to consign to unknown parties, whether they make their appeals by circulars or in person, no matter what inducements they may offer, without first making sure of their ability to do what they promise. It is well to consider this matter before the busy season comes on.

The Foreign Meat Trade.—On the first page will be found a series of engravings giving scenes connected with the important and growing business of shipping meat to Europe. In the description reference is made to the plan of the refrigerator, showing the interior arrangement, which is here given.

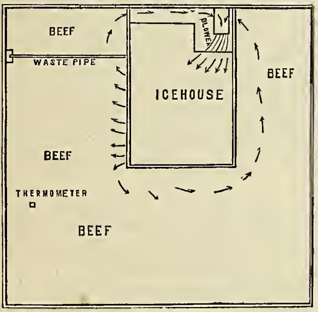


Fig. 5.—PLAN OF REFRIGERATOR.—(*See 1st page.*)

"Black Quarter," Carbuncular Erysipelas.—"C. J.," Rockbridge Co., Va. This disease is frequent at this season amongst well-kept calves and yearlings. It does not effect the half-starved ones. The principal symptom consists of large black patches beneath the skin of the legs, shoulders, or flanks, and over these patches the skin is puffed up and crackles when pressed or rubbed. It is a disease of the blood, supposed to be caused by the presence of vegetable organisms in the fluid, which destroy its vitality. These vegetable growths or cells have been discovered by microscopical examinations, and seem to be produced by the entrance of germs through the stomach. It is possible that these may exist in the water or grass, and are most abundant in the spring, when the young herbage is luxuriant. There seems to be no certain cure, as the disease is too rapidly fatal after its discovery, and the only course is to prevent it by giving, early in the spring, frequent doses of half an ounce of hyposulphite of soda, and being careful of changing the feed too suddenly.

Filling in Buildings.—W. A. Dean, Fillmore Co., Minn. The filling of the space between the outer boarding and inner plastering of a house, with sawdust or some such material, is nothing new. Sawdust, spent-tan, and the like, are valuable as non-conductors of heat, mainly on account of the air they hold in their interstices. There is no better conductor than a body of air enclosed within a tight space between the two walls. The method by which this may be easily secured, is given in the *American Agriculturist* for March, 1875, p. 89, with a diagram, to be had for 15 cents.

Chufas Again.—Some 20 years ago the Chufa, or Earth Almond (*Cyperus esculentus*), was introduced as a plant from which great things might be expected, its chief use being as food for swine. The plant is one of the sedges, and closely related to the Coco or Nut-grass, which is such a pest to Southern agriculture, and bears tubers in a similar manner; these tubers are from the size of a pea up to that of an almond, or larger, and have a sweet pleasant taste. In a few years after its introduction, nothing was heard of the Chufa, except here and there as a curiosity. Within the past year or two the interest in the plant has revived, the Southern papers are advocating its culture, and the tubers for planting are advertised in large quantities. While no definite experiments are given, it is claimed that an acre in Chufas will produce more pork than an acre in corn, and it is evident that they will be largely planted this season. The culture is very simple: the tubers, previously soaked if very dry, are dropped a foot apart in furrows made 30 in. or 3 feet apart, covering about an inch; on very rich land 18 inches is near enough for the tubers. The after culture is to clear the space between the rows with a cultivator of some kind, using the hoe in the rows. When frost stops the growth, the pigs are turned in to do their own harvesting; of course enough tubers must be previously dug for seed. The yield is said to be about 200 bushels to the acre. We noticed some of the seed Chufas a short time ago in the store of Wm. H. Carson, 125 Chambers St., New York.

Basket Items continued on page 193.

The New York Horticultural Society.

The attendance at the regular monthly meeting on April 3d, was less than usual, as at this time the florists and gardeners are in the midst of their busiest season. There were some very interesting plants and flowers on exhibition, principally from Wm. Bennett, Flatbush; G. Such, South Amboy, N. J.; I. Buchanan, Astoria, L. I.; R. B. Parsons, of Flushing; John Henderson, Flushing, L. I.; Wm. A. Burgess, of Glencove, L. I.; Wm. Wilson, Astoria, L. I., and Charles Zeller, Flatbush, L. I. There was a gratifying increase in the number of amateurs present, particularly ladies, who thronged the rooms. Many of them took notes of the articles on exhibition, reminding us of what is so generally the practice at the flower shows of Europe. The exhibitor finds his remuneration in orders for plants from the specimens he exhibits; at the same time the amateur in flowers obtains a knowledge of plants and their names, and learns something of culture. An interesting paper was read by Mr. David Foulis, New York, on "Cut Flowers and Floral Decorations." His essay gave an account of the kinds of flowers now used for decorative purposes, and showed the great improvements that have been made, and the immense increase of the business during the past twenty years. He made the broad assertion that in no city in the world was the business of cut flowers or floral decorations done so well, or to such an extent, as in the city of New York. The essay was well received, and it was to be regretted that there were not more to listen to it.

The Adjustable Plant Box.

There are some inconveniences attending the use of small pots by those who raise tomato and other plants in the window of the kitchen or other warm room, and a box of some kind, or even a tin can, is preferred by many.

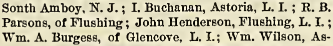


Fig. 1.—THE BOX FLAT.

Various contrivances have been proposed, to allow the box to be taken away from the ball of earth, and allow this to be set in the ground without disturbing the roots; among these we have seen none that seem so well adapted to secure this as the Adjustable Plant Box, invented by Mr. C. M. Crandall, of toy-making fame. Pieces of thin board, with similar dovetailing to that used in his building blocks, are used for the sides of the box; four of these are put together and fastened by pivots as in figure 1. It is but the work of a few seconds to put these into the shape of figure 2, when the box is ready. As many boxes as are desired are set together upon a board, which serves as a bottom for all, filled with earth, and they are ready for the plants. In a short time the earth gets so compacted, and is so held by the roots of the plant, that the box may be lifted, or may be taken quite away from the ball of earth, which will hold its shape. The readiness with which the plants may be transferred from the boxes to the open ground, may be seen at once, and the plants will be so little disturbed by the operation, that they will never know it. One advantage of these boxes is their durability, and when not in use they may be laid flat, as in figure 1, tied together, and put away for another season. If one chooses to make a larger box, it can be done by uniting two in the manner shown in figure 3, and they are susceptible of a variety of combinations, as shown in figure 4, and others will suggest themselves to those who may wish to use them for a miniature window-box. Being General Agents for the other manufactures of Mr. Crandall, the Orange Judd Company have also the sale of these, which they offer to dealers in packages of 500 each. Those who wish to purchase them at retail, may order them of seedsmen and other dealers in horticultural wares.

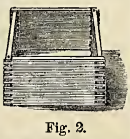


Fig. 2.

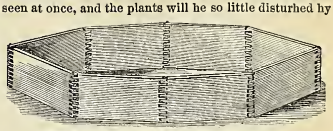


Fig. 3.—BOX MADE WITH TWO FLATS.

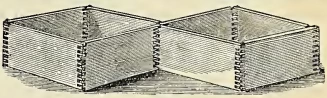


Fig. 4.—DIAMOND SHAPED BOXES.

Bee Notes for May.

BY L. C. ROOT, MOHAWK, N. Y.

Each month I am more convinced of the advantages of having the readers of "Bee Notes" send in such questions as they desire to have answered, as we thus ascertain their wants, and, as far as possible, meet them. Readers of the "Notes" are again requested to continue their queries. The questions at hand are of general interest, and cover the practical operations for the month.

When to Transfer.—"Would you advise me to transfer my bees during April?"—I consider the best time to be that when apple trees begin to blossom. Full directions may be found in "Bee Notes" for May, 1876.

Combs when Bees Die.—"What would you do with combs in box hives in which the bees have winter killed?"—Brush the dead bees from them, and if you use movable frames, transfer the combs to these for the following season's use. They may be used for extracting, or be placed in empty hives, and swarms hived in them. If you desire to continue the use of box hives, set the hives with the empty combs away in a cool place, until swarms issue, when swarms may be placed in them. The value of empty combs is not appreciated by many.

A Substitute for Pollen.—"Do you feed rye flour early in spring?"—After bees are placed on their summer stands, I feed unbolted rye flour, ground as fine as possible, giving all they will carry. Spread it out thin on a broad flat surface.

Feeding in Spring.—"Would you feed diluted honey in the spring to stimulate breeding?"—Yes, either honey or sugar syrup. I prefer syrup, as it is less likely to induce robbing.

Discouraging Bees from Flying.—"Ought bees to be discouraged from flying during cold and windy days?"—The loss of bees on such days is greater than is supposed. Hence we should prevent their flying.

Sealed Honey.—"Is it important to have ample stores of sealed honey in each hive in order to secure rapid production of brood?"—There should be a moderate amount. Not enough to fill the combs that should contain brood.

Spreading Combs.—"After settled warm weather comes, would it not be well to spread apart the brood nest, and insert an empty worker comb, in order to accelerate brood rearing?"—I practice this largely. Do not spread combs in hives that are not strong enough to care for brood when too much separated.

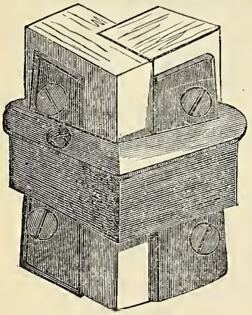
Langstroth and Quinby Frames.—"Are the standing frames of the Quinby hive as easily and quickly handled, when occupied by bees, as are the Langstroth frames?"—This is a question upon which beekeepers differ very much. Every person can handle those frames best, to which he is accustomed. After the first comb is removed, the preference is with the Langstroth frame, in this one respect.

Italians and Natives.—"Are Italian bees preferable to natives?"—Yes, except in localities where the forage is largely buckwheat. Even there, a portion of the bees kept should be Italians, to take advantage of their working on different kinds of flowers....."Why do black bees gather honey from buckwheat better than the Italians?"—I do not know *why*. The fact that they do so is the point of interest.

Alsike Clover.—"What do you think of Alsike clover for a forage plant as to quality of honey? Will it stand the drouth better than red clover?"—The quality and quantity of honey are good. It does not stand drouth well, but does best on moist ground. It is not a lasting kind of clover.

Loss of Bees.—"A. C. B." Hives that have too much honey in the fall are in very poor condition for wintering. This is without doubt the cause of your loss. Having no empty combs in which to cluster and form a compact body, they soon became frozen between solid combs of honey. If 20 lbs. of honey had been taken from the center combs with the extractor, without doubt the bees would have been saved. The combs being old is an advantage rather than otherwise. The honey ran from the fact that the combs were broken by freezing.

Quinby Hive.—"How long and wide should the bottom board of the Quinby hive be?"—As wide as the frames are long, and as long as the width of eight frames, with six inches each side for boxes, to which should be added on all sides the thickness of the lumber for outside case...."What is at the sides and top of frames?"—When the boxes are not in place, I use panels at the sides, and a quilt on top...."How is the outside case made?"—Each of the four sides is made separate, fastened at each corner with the clasp, shown below. I make them 26 in. long, 19½ wide, and 18 in. high, inside.



CLASP FOR HIVE.

Honey Eighteen Years Old.—A correspondent reports a box of honey that he has kept 18 years, that is seemingly in good condition, and not candied in the cells. In referring to it, he says he desires to show that "combs with unbroken cells will keep a great while, whether the cells were capped or not."—In this I think he is incorrect. If honey is kept in a perfectly natural state, as when stored, even half as long as the box he mentions, it must be perfectly capped and sealed, and kept under very peculiar conditions. The subject of preserving honey is one of interest, and the attention thus called to it, may lead to valuable investigation.

Weight of Swarms.—The swarms, the weights of which were reported in Feb. and March notes, consumed during Feb., as follows: the one out-doors 5 ℔s; of those in-doors, one consumed 2½ and the other 2 ℔s. In March, that out-door 3½ ℔s, and the other two 1℔ each.

Helps in Sheep Shearing.

There are many helpful contrivances which tend to ease the tiresome labor of shearing sheep. To avoid stooping, the shearer may use the table shown at figure 1. This is made with a hollow, curved top, upon which the sheep is laid and secured by passing over its legs the cords, shown at each side. Each of these cords has a hook at the end, by which it is fastened across the sheep's legs, to an eye screwed into the side of the table. When one side of the sheep is shorn, the cords are loosened, the animal is turned over, the loose part of the fleece being tucked under it, as it is turned, and the legs fastened on the other side. The shearing is then finished, and the sheep turned off. Before the sheep is shorn, it should be tagged, and a table for this purpose is shown at figure 2. The sheep is placed on this table feet upwards, in which position it is perfectly helpless, and will not struggle. Then the soiled wool about the hind parts, the belly, or the legs is clipped off with great ease, less than a minute being needed to tag a sheep. Half that time will serve for some shearers to do this. In large flocks these tables will be necessary, and those who have small ones will find them very useful.

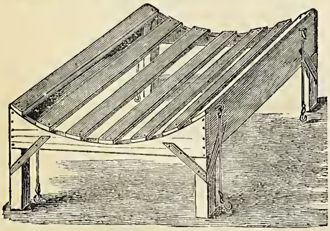


Fig. 1.—SHEEP SHEARING TABLE.

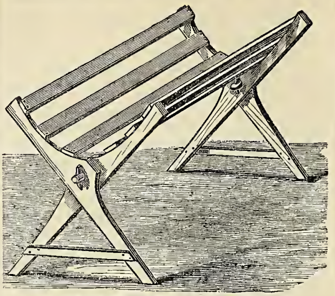


Fig. 2.—TROUGH FOR TAGGING SHEEP.

Ogden Farm Papers.—No. 87.

BY GEORGE E. WARING, JR.

I have long known Mr. C. M. Beach, of Hartford, Conn., to be unusually careful and reliable in all matters pertaining to his dairy. Learning that he had recently given his personal attention to the testing of his herd of Jerseys, I applied for full particulars for publication, and give them herewith:

"We tested our herd for the week ending last Saturday, March 17th, taking the milk to exactly the same point as in the previous week. I believe the cows are all in calf, with the exception of three. The following table shows their condition:

Names of cows.	*Jersey Herd Register No.*	*When dropped.*	*Last calf.*	*Days since calving to March 13.*	*Age.*	
					years.	*months.*
Bettine..........	3062	Feb. 19, '70	Feb. 14, '77	28	7	1
Fantie..........	3066	April 6, '71	Sept. 12, '76	182	5	11
Daisy Wash'ton	3063	Feb. 22, '72	Aug. 21, '76	204	5	1
Dotha........	3073	April 3, '72	Feb. 22, '77	21	4	11
Doretto..........	3072	Feb. 28, '73	Aug. 8, '76	217	4	½
Roberta Gray..	3068	April 19, '73	July 26, '76	230	3	11
Greta..........	3076	May 11, '73	Dec. 28, '76	75	3	10
Poem..........	3077	May 30, '73	Sept. 3, '76	191	3	9½
Faithful.........	3078	July 2, '73	Nov. 2, '76	131	3	8
Freeda	3079	July 4, '73	Nov. 27, '76	104	3	8
Witch Hazel 2d	2828	Mch. 10, '74	May 15, '76	302	3	
Donna..........	4412	Mch. 24, '74	Feb. 13, '76	393	3	
Kitty Clover, Gr	15-16	May 15, '69	July 27, '76	229	7	10
Aline	Guernsey	Aug., '74.	Oct. 18, '76	146	2	7
				Av. 175 d.	Av. 4.5	

"The milk was only measured by counting the number of cans, but the estimate of something under 7½ qts. for a pound of butter cannot be out of the way—the cans being of the same size and filled alike as nearly as possible.

"The product of butter from the cream churned was 209 balls of ½ lb. each, making 104½ lbs. We are feeding one calf, and in addition there were used during the week over 56 qts. of fresh milk, equal to 8 lbs. of butter. This makes a total product of 112½ lbs. of butter, or almost exactly 8 lbs. average to each cow.

"The previous week, under the same circumstances, we made 203 balls, or 101½ lbs. of butter. An exact trial of three days' milk from the herd a short time previous, gave 1 lb. of butter to 7⅝ qts. of milk. There is a slight variation from week to week in richness caused by feed and the quantity of milk the cows are giving. Some think we feed too high, but so far I see no ill effects, and have been doing the same for several years. These facts I am willing to vouch for."

I do not hesitate to accept this statement as being not only that of a man who honestly believes what he says, but who is also sure to say nothing that he does not *know* to be true. I am disposed to regard this as the most valuable report that we have had. Dividing the cows roughly into two classes, four came in early and ten came in late, but the average time from calving was between five and six months, and the herd probably averages between three and four months in calf. As they will come into summer keep in good milking condition, they will doubtless increase their yield on grass. In view of the season of the year and of the condition of the animals, it seems reasonable to suppose that they are not now making more than the average of their yearly product, which would carry the average yield of each one of a herd of fourteen cows to something over 400 lbs. of butter each per annum. This seems incredible. Let us suppose that we make a deduction of 25 per cent, we shall still leave an average of 300 lbs. per cow per annum. This is not the largest story that I ever heard of the performance of a herd of Jersey cows, but it is the largest that I have ever believed, and this one I do believe. The process by which Mr. Beach has attained this success, cannot probably be exactly formulated. Good care, rich land, and ample feeding, have been important items, but probably much is due to his luck in beginning—at a time when his own knowledge of the breed was slight—with a herd containing one or two unusually good cows. This has been supplemented by a shrewdness that led to keeping the best animals and selling the inferior ones. No price that any one would be likely to pay, would buy his best cow, while the less satisfactory animals were freely sold at whatever they would bring. Probably Mr. Beach does not ascribe much of his success so far as quantity goes, to the use of deep cans, but he believes that he gets an improved quality by their use.

J. M. B., of New York, writes about churns. Forty years ago he used something similar to the Bullard—a long box set on rockers. The rocking sent the cream from one end of the box to the other. This was not very satisfactory, and he tried a churn in which the dasher moved back and forth through the cream. Since then he has used many others, liking best a barrel churn, which he has used for fifteen years past. This has paddles worked by a crank; and he finds the usual objection, that, as the floats do not work close to the sides of the barrel, there is soon deposited a considerable thickness of cream which gets no churning. He thinks that this occasions a loss of from 5 to 10 per cent of the butter. This waste is probably overestimated; but if anything like this, is a serious objection to these churns. Probably the rocker churn described did not throw the cream with sufficient violence. We find that the "Bullard" does so. Mr. J. B. Williams, of Conn., has invented a barrel churn, in which the floats, when turned in one direction, for churning, run close to the sides; when turned in the opposite direction, for working the butter, they leave considerable space. I hope to try this churn this season.

The same writer asks about the strip of land on Ogden Farm, described some years since as having been injured by too deep plowing. Time has greatly improved this land, and it is now about as good as that lying on either side of it. It stood last season's drouth no better than the rest of the field. It may show an improvement when we plow it up again, but thus far it offers no argument in favor of turning down a good surface soil, and bringing up a stiff clay sub-soil.

Mr. B. also asks about "dried grass," a subject which I have overlooked for a year or two past, and whether "early cut hay" has taken its place. "Are there any experiments on record, of the effect on the subsequent crop of early, medium, and late cutting for hay?"—He suggests that valuable information would be gained by investigating this matter and recording the results. So much depends on the effect of the season, whether wet or dry, hot or cool, that such experiments, to be reliable, should be continued for many years, and should be conducted under the exact methods of an agricultural Experiment Station. I have watched the matter pretty closely at Ogden Farm, and do not see any very material difference between ordinary early and late cutting, so far as the subsequent growth is concerned; but there have been so many circumstances to be considered, that the observation has no special value. Where we have cut very early, before blossoming (dried grass), there has always been a good subsequent crop, apparently only less than an original uncut crop, because the time for its growth was thrown into dry weather. The experience of those who irrigate suitable grasses with sewage throughout the season, shows that the second, and even the third cutting are as large as the first. Grass cut long before blossoming seems to make less valuable hay than that which is cut at just the right time—in full flower or in early seed. In a certain sense, the rowen cut late in the summer, may be called dried grass, but it is much firmer and richer than would be a corresponding growth in May and early June, when there is more rain.

I am asked whether cotton-seed meal is a better fodder for milch cows than Indian meal. Decidedly, no. It is very nutritious, very fattening, and very rich in constituents which add value to manure. It is largely used in stall feeding in England, and it is used to a considerable extent in this State, (R. I.) For beef cattle to be sold alive, it is very good, but it does not make very good meat, and is decidedly objectionable for dairy cows, being tallowy in its effect. I have found it to give butter a crumbling or flaky consistency, and have been obliged to give up its use. The fat that it produces, when fed to beef cattle, is of an undesirable character. So far as meat and butter are concerned, Indian-corn meal is vastly better.

Science Applied to Farming.—XXIX.

A Farm Experiment with Commercial Fertilizers, and its Lessons.

In the vineyard regions of the Rhine, in Germany, there are many farms in which nearly or quite all of the stable manure produced is used for the grape, which is the most important crop. For the rest of the crops it is necessary to rely upon other fertilizing materials. On one of these estates, which contains the famous Johannisberg vineyard, a series of experiments has been going on for several years, which illustrates very pointedly some of the principles that I have been trying to enforce in previous articles. Starting with the entirely correct idea that the results of field experiments are, in most cases, only applicable to the place and circumstances in which they are performed, Herr Czéh, the manager of the farm, propounded a question, in substance, as follows:

Under the special circumstances of soil and crops which obtain here, what fertilizers (that is, which ones of the more important ingredients of plant-food and in what forms) will be most profitable? Knowing that, to answer this question fully, would require repeated trials, Mr. Czéh planned a series of experiments to run through an ordinary course of rotation. On one field a ten year's course was begun in 1872, and was to be:

1st year, Oats.
2nd " Fodder Vetches.
3d " Winter Grain.
4th year, Hoed Crops.
5th " Barley with Lucern.
6th to 10th year, Lucern.

The soil experimented upon is a loamy sand, with a good many coarse stones. About one foot below the surface comes a compact subsoil. The field selected had borne potatoes for two years, and was pretty well worn down, and hence just adapted to the experiments. The plan of the latter was one suggested by Ville and consisted in applying to one plot a complete fertilizer, to another the same with the omission of nitrogen, while from a third phosphoric acid, and from a fourth potash was omitted, and so on, the last of the plots, seven in number, being left unmanured. The amounts of the different fertilizing materials used on each plot are shown in the table below:

Kind of Fertilizer.	*Pounds per acre on each plot.*						
	I	II	III	IV	V	VI	VII
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Superphosphate...............	357	357	....	357	357	....	....
Sulphate of Potash...........	178	134	....	....	....	....	....
Nitrate of Potash.............	...	....	178	....	178	....	....
Sulphate of Ammonia..	268	....	223	357	223	357	...
Sulphate of Lime (Plaster)..	312	312	312	178	....	....	....

The land was carefully prepared (by plowing, harrowing, etc.), the fertilizers mixed with four times their amount of earth, and spread uniformly over the plots, the seed sown broadcast and harrowed in with the fertilizers. The results the first year with oats are given in the table below, which, with the notes, deserves careful study.

EXPERIMENTS WITH OATS.—*Seed, sown March 27, came up so as to be visible over whole field, April 12. Crop harvested August 12.*

Number of plot.	Fertilizer.	*Begun to blossom.*	*Begun to ripen.*	*Greatest hight of stalks. (Inches.)*	*Yield per Acre.*			*Weight of Oats per bushel.*	*Rates of weight of grain to weight of straw.*	*Increase of weight of manured over unmanured in lbs. to acre.*[8]	
		Date.	*Date.*		*Total.* *lbs.*	*Grain.* *lbs.*	*Straw.* *lbs.*	*lbs.*		*Grain.* *lbs.*	*Straw.* *lbs.*
I[2]	Complete Fertilizer........	July 11	Aug. 3	54	6,046	1,659	4,387	39.6	1:2.64	+ 89	+2,015
II[3]	Without Nitrogen................	" 5	July 25	37	4,726	1,498	3,228	44.8	1:2.15	— 72	+ 856
III[4]	Without Phosphoric Acid........	" 10	" 30	49	6,029	1,855	4,174	39.2	1:2.25	+285	+1,802
IV[5]	Without Potash......	" 10	" 30	43	5,565	1,784	3,781	40 0	1:2.12	+214	+1,409
V[6]	Without Sulphate of Lime[1].......	" 12	Aug. 3	51	6,029	1,605	4,424	38.4	1:2.76	+ 35	+2,052
VI[7]	Sulphate of Ammonia...........	" 12	" 3	49	5,636	1,587	4,049	40.7	1:2.55	+ 17	+1.677
VII	No Manure.........	" 2	July 21	28	3,942	1,570	2.372	43.2	1:2.55	.....	.....

(1) Except that which was contained in the superphosphate.....(2) On May 2, after a rain, strikingly dark green, at harvest time mostly lodged, the stalks 1½ times as long as those of VII, and very large.....(3) Light color like No. 7, stood up well, ears very well developed.....(4) Dark green, lodged, long ears, very thick stalks.....(5) Light green, somewhat lodged.....(6) Dark green, mostly lodged, ears of ordinary size.....(7) Dark green, large part lodged, ears ordinary size, stalks large.....(8) That is to say, the amounts of increase, resulting from the use of different fertilizers, are as indicated by the figures preceded by the sign +, II, without nitrogen, gave less than the unmanured, as is indicated by the sign —.

From this first trial the author infers "that this soil, which had not been manured since the memory of man, shows, first of all, a need of nitrogen. * * * By the application of chemical manures the total crop was increased about 53 per cent. * * * With the complete fertilizer, contrary to all expectation, the yield was not particularly better, either in quality or in quantity, (than those obtained when some of the ingredients, as phosphoric acid, was omitted.) * * * In absence of nitrogen the other materials affected the specific gravity of the grain, but made little difference with the straw. * * * For some unexplained reason, there was less grain from the fertilizer without nitrogen, that where no manure was used * * *." But these and other observations based on one year's experiments were not entirely conclusive. The next year vetches, or more accurately, a green-fodder crop of vetches, oats, peas and maize, mixed together, was to be grown. Nitrogen in the form of sulphate of ammonia, was applied to all the manured plots. The season was very dry, and the crop proved a failure. The third year, 1874, winter grain came in the regular course of rotation. Probsteier rye was sown with the same fertilizers as were used for the oats in 1872, and with similar results.

The details, though very interesting and instructive, and in some respects puzzling, would, I fear, be a bit too tedious for this place. I give, therefore, in their stead, some calculations which Herr Czéh has made for comparing the crops of the two years. Reckoning the unmanured crops as 100, the amounts of the others would be as in the first two columns of figures below. The averages for the two years are given in the third column, while the last column shows how much the crops, where the different ingredients were omitted, fell below the maximum that obtained with the complete fertilizer.

Plot.	*Fertilizer.*	*Oats in 1872.*	*Rye in 1874.*	*Average of two crops.*	*Decrease from absence of Fertilizing Ingredients.*
I	Complete Fertilizer.............	152	162	157	....
II	Without Nitrogen.................	120	149	134	23
III	Without Phosphoric Acid.......	149	164	156	1
IV	Without Potash...................	141	152	146	11
V	Without Sulphate of Lime......	153	161	157	none
VI	Sulphate of Ammonia alone....	143	99	121	36
VII	No manure........................	100	100	100	57

That is to say, counting the average of the total yields for the two years on the unmanured plots as 100, that with the complete manure was 157. Where the nitrogen was left out, the yield fell to 134, a loss of 23, without potash it was 146, a loss of 11. But without phosphoric acid, the yield was 156, almost the same, and without sulphate of lime it was 157, exactly the same as with the complete fertilizer. The inference is clear. The phosphoric acid and the plaster did no good.

From these experiments Herr Czéh infers that the phosphoric acid and sulphate of lime have no special value in fertilizers for this particular field.

In citing these experiments, I have had two objects in view, first, to give an illustration of one of the ways in which an enterprising farmer may study the needs of his soil and crops, and second, to illustrate the principle, too little understood by farmers, and not enough appreciated by many who claim to stand in advance of most farmers in knowledge of such matters; that soils vary in their needs of plant-food, and that, if we are going to buy fertilizers to put on them, we should select the ones that furnish the needed materials, rather than to pay our money for ingredients that are not needed. Phosphates and bone manures, which make up the larger part of the commercial manures in ordinary use, furnish varying, but generally small quantities of nitrogen, and little or no potash. Their most important ingredient is phosphoric acid; they all contain lime, of which, in the superphosphates, a considerable is in the form of sulphate. In a vast number of cases these are just what is wanted. But in the one just described, the phosphoric acid and sulphate of lime did very little good. It certainly would have been poor economy for Herr Czéh to buy phosphates and bone manures for the land and crops he experimented on. Peruvian guano, which is rich in nitrogen, and furnishes a little potash, would have been better, but a large part of its value is in phosphoric acid, which was not wanted, at least not for present use. Of course, after long cropping, the conditions might be changed. But most of us can not afford to store up large excess of costly material in our soils, to be drawn upon, perhaps, a decade or a generation hence, and perhaps, never. We want our investments to bring the best return in the quickest time, and we ought to try to apply such fertilizers as will do this, and at the same time bring the plant-food in the soil into equilibrium with the needs of our crops. To learn how to do this, is the object of such experiments as I have been recommending.

W. O. Atwater,
Conn. Agricultural Experiment Station, Middletown.

Country or Village Cottage, Costing $1,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan is designed to answer many requests for a "cosey and homelike Cottage, suited to the wants of Mechanics and Laboring people, costing from $700 to $1,000." It is best adapted to a westward frontage—with the hall, entrances, and porches protected from the north, but may be easily adapted to an opposite frontage by reversing the plan—placing the hall, etc., on the opposite side of the main house. The width, 21 feet, adapts it to a 25-foot village lot, leaving a side passage to the rear.... **Exterior,** (figs. 1 and 2.)—The *style* of any building is determined by the form of its roof; the steep and hooded style in this design accords fully with domestic feelings and artistic sentiments—and is growing in public favor for suburban structures. Compared with the usual *Mansard* style is more practical, less expensive, and serves equally well. The side angles, porches, bay window, cornices, and chimneys, each of simple construction, make up a pleasing variety of parts. All superfluous ornamentation is avoided. A too common fault prevails in villages, and even in the country, of building close up to the street lines. A clear depth of at least 20 feet in front should be devoted to a flower garden, shrubbery and vines, for flowers are proper accessories of cottage adornment, and architectural ornamentation can never compensate for their absence ...**Cellar,** (fig. 3.)—Hight of ceiling 6½ feet.—It extends under the front half of the building, giving an average area of 11½x 15 feet—quite sufficient for ordinary requirements.* It has two small front windows. A good ventilation may be had through the chimney; openings in the rear foundation allow a circulation of air over the unexcavated portion....**First Story,** (fig. 4.)—Hight of ceiling 9 feet, is divided into a hall, parlor, living-room, rear entry, and a closet. The hall, entered from the front porch, connects through doors with the parlor, living-room, and rear entry, and contains the main stairs. The parlor has a large bay window in the front, opposite to which is a marble shelf resting on stucco trusses. It communicates with the living-room and hall. The remaining wall spaces are unbroken, for furniture and wall ornaments. The living-room is a little larger than the parlor, has two windows, an open fireplace, a closet, and doors leading to the front hall, parlor, and rear entry. The rear entry is under the platform of the main stairs—is divided from the front hall, and is to be used as the common entrance. It has doors leading from the front hall, living-room, rear porch, and the cellar stairs. The parlor may be warmed by placing a radiator under the marble shelf, and passing the smoke-pipe from the living-room through it. The cost of such a radiator is $8....**Second Story,** (fig. 5.)—Hight of center ceilings 7 feet; hight of side breast-walls 3½ feet.** The stairs leading to this story are made with a platform, placed 3 risers below the upper landing, which allows for the required head-room. The divisions provide for four rooms, a hall, and two closets; the large chamber has a double window in front, a marble shelf on the chimney breast, and a closet; the hall bedroom is designed to be used in connection with the large chamber as a child's room....**Construction.**—The excavation for the cellar is made 4 feet deep, and for the rear foundation walls 1 foot. The loose earth is graded around the foundation at completion, leaving 1½ feet of the foundation exposed to sight on the outside. The foundation walls are of broken stone, laid in common mortar, 16 inches thick, and neatly pointed where exposed to sight, and are generally even with the framework on the outside. Provision is made for the cellar stairway, by extending the adjoining walls beyond the inside of the frame to the hight of the ground, and finishing above with brickwork. The chimney is started with the cellar walls, and arranged with two continuous flues to the top. Side openings are made under the cap by inserting 6-inch earthen thimbles on each side of the flues. The top courses of brickwork are laid across the entire chimney, making a solid and more lasting cap. Sheet-iron thimbles are put in the chimneys adjoining the parlor and front chamber. The framing, inclosing, flooring, etc., are done in a substantial manner, of materials indicated in the estimate below. Beams placed 2 feet apart from centers; rafters and studding 16 inches apart. The cornice trusses are made of 2x4-inch timber, as shown on page 129, April *American Agriculturist*, 1875, and the shingling and gutters on page 173, of the May number, 1875. Sash 1½-inch thick, glazed with second quality of French sheet-glass, counter checked, and hung to iron balance-weights with good cord. Doors 4-paneled each, for the outside and rooms in the first story, and 1½ inches thick; all others 1¼ inches thick, molded, with double faces. The main stairs has a 7-inch octagon newel, a 2¼x4-inch molded rail, and 2-inch turned ballusters, all of black walnut. The side walls and ceilings of the two full stories are white sand finished, on one coat of "laid off" brown mortar. This is the favorite mode of plastering through the Eastern States—while in the neighborhood of New York two coats of brown mortar are usually applied. Where one-coat work is properly done—more hair is mixed in the mortar, increasing its strength. The *same quantity* of mortar is used as for two coats; the advantages claimed for the "one-coat" work are, a saving of one-third in labor, and obviating the delay for the additional coat to dry. All the wood-work usually painted, and the chimney-top, have two coats of best American lead and *raw* linseed-oil; for more extended remarks on painting, see the *American Agriculturist* for June, 1875, page 212.

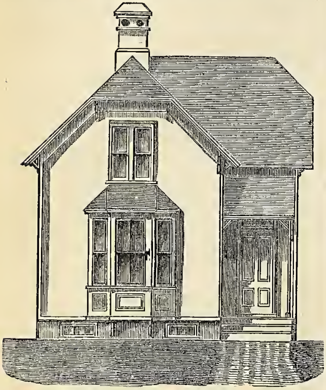


Fig. 1.—END VIEW OF COTTAGE.

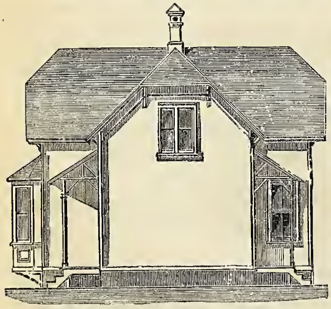


Fig. 2.—SIDE VIEW OF COTTAGE.

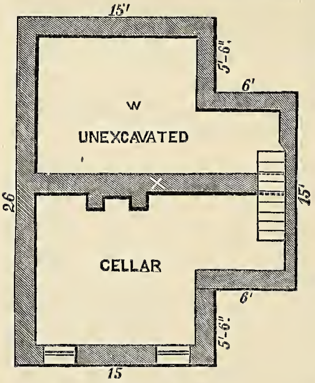


Fig. 3.—PLAN OF CELLAR.

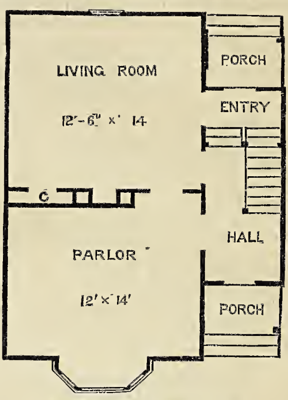


Fig. 4.—PLAN OF FIRST FLOOR.

Estimate of materials required—and total cost:

58 yards excavation at 20 cents per yard	$11.60
26 perches stone-work, complete, at $2.50	65.00
2000 bricks, furnished and laid, complete, at $12	24.00
360 yards plastering, complete, at 25 cents	90.00
1694 feet of timber, at $16 per M	27.10
1 sill, 4x7 in. 26 feet long.	
3 sills, 4x7 in. 15 feet long.	
1 sill, 4x7 in. 23 feet long.	
8 posts, 4x7 in. 13 feet long.	
1 girt, 4x6 in. 15 feet long.	
3 ties, 4x6 in. 15 feet long.	
1 plate, 4x6 in. 26 feet long.	
1 plate, 4x6 in. 23 feet long.	
14 beams, 3x7 in. 21 feet long.	
13 beams, 3x7 in. 15 feet long.	
20 ceiling strips, 1¼x5 in. 13 feet long.	
50 joists, 3x4 in. 13 feet long, at 16 cents each	8.00
200 wall strips, 2x4 in. 13 feet long, at 13 cents each	26.00
130 siding boards, at 23 cents each	29.90
160 shingling lath, at 6 cents each	9.60
40 bunches shingles, at $1.25	50.00
12 spruce plank, at 20 cents	2.40
Materials in cornices, $14; stoops, complete, $20	34.00
95 flooring, at 18 cents each	17.10
2 cellar windows, complete, at $3 each	6.00
2 single windows, complete, at $12 each	24.00
3 double windows, complete, at $15 each	45.00
15 doors, complete, at $9 each	135.00
Closets, shelving, and nails	20.00
Stirs, $50; bay window, complete, $50	100.00
Tin, (gutters, valleys, and leaders)	11.00
2 marble shelves, $10; painting, $80; carting, $15	105.00
Carpenter's labor, not included above	100.00
Incidentals, sink, pump, etc	59.30
Total cost	$1,000.00

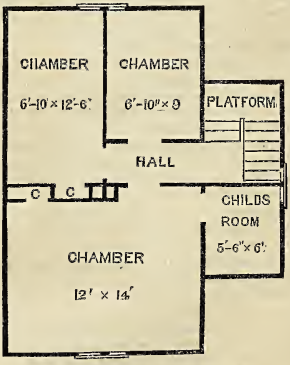


Fig. 5.—PLAN OF SECOND FLOOR.

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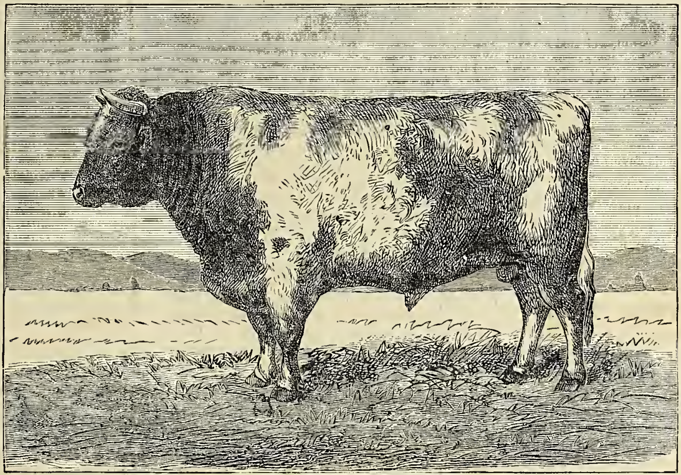
* We well remember a trite saying of our boyhood days on the farm, "Always build your cellar under the whole house." Mr. Reed is studying to keep the expense low, but we would advise enlarging the cellar by omitting the wall *X*, and either making the cellar "under the whole house," or at least back to *Z*, *W*. The expense would be but a trifle more, if any, while it would give a more spacious airy cellar, needed in a small house partly for storage. If stone were not very scarce, we would advise a clear hight of 7 feet....** We would also advise making the hight of the 2nd story 7½ or 8 feet. The extra cost would be but a trifle—only for the side walls, the cost of ceiling and floor being the same. It will add materially to comfort and healthfulness to have a foot more in hight, by affording more atmosphere.—Ed.

Beef Cattle—For Home Use and Export.

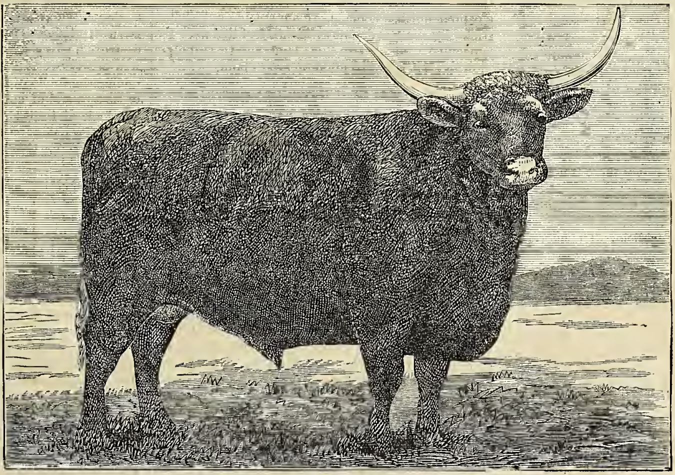
Value of the Export Trade to all Farmers—Best Cattle—Short-horns Cheap—Devons.

The rapidly increasing exportation of beef to England will attract the attention of farmers to the profitable employment of rearing and feeding cattle for this, as well as the home market. In one week last month, 2,330 head of beeves were shipped from New York, alone, and 550 more went from Philadelphia. In the possible event of satisfying the English demand, there are other European countries whose people are hungry for meat, and eager to pay their gold for a supply. Our advantageous situation, being in a direct and the nearest line across the ocean to these waiting markets, gives us the first chance of securing the business and confers upon us, to a great extent, a monopoly of it. We may therefore consider that the value of meat has come to the bottom, and that the present rates may remain steady, if they do not advance, for years to come. That they will advance seems even more probable than that they will retain their present level, and altogether the prospect for a steady and profitable business in this branch of agriculture, is of the most encouraging character.



SHORT-HORN BULL, "ROYAL BENEDICT," BRED BY T. C. BOOTH, ESQ., OF WARLABY, ENGLAND.

The very intimate relation that exists between the production of meat and successful farming, is one of the settled facts of agricultural practice. The employment of rich and stimulating food not only hastens the maturity of the animals fed upon it, and returns a direct profit, but it produces an abundance of the richest manure, and in this gives a second profit. It must be remembered at the outset, that the profitably fed animal must be supplied with purchased food, in addition to that which is grown upon the farm, and that the employment of the additional capital thus expended, leads to increased profits. This is "high farming," and this term, which has been held as a bug-bear by some, means simply and only this, viz., the use of the soil in such a way as shall enable it to take in as much as can possibly be made to give out again the largest possible profit. The soil, in the hands of a high-farmer, is a machine into which he pours cheap raw materials, and from which he takes out valuable finished products. Here is the opportunity for the employment of skill and intelligence, by which man's labor is made the most productive and profitable. The most important element of success, however, in stock feeding, is to have the right sort of animals to feed. These are the machines, as it were, by which the raw material is worked up, and every person knows how much better it is to have a perfect machine to work with, than a mere make-shift.



FAT DEVON OX, BRED BY MR. KIDNER, OF ENGLAND.

There are animals that are able to eat and digest only enough to sustain life, while they slowly grow to maturity during six or eight years, and then they are of very inferior value for beef. On the other hand there are those which can be made, by only two year's high feeding, to reach a greater weight, and make a more valuable product, than the former at six years of age. The feed consumed during the short life of the best cattle, is probably not half that eaten by the poor stock. The saving made then by feeding the best, amounts to 50 per cent of the hay, grain, and roots used, and three years or more of time and labor. This is the plain and simple reason why the best breeds of cattle are held to be more valuable than the common stock, or the so-called scrubs. Unfortunately, of late, much of a speculative character has been given to the business of rearing and selling of the best of our breeds of beef cattle, the Short-horns. This excitement, however, is past, probably never to return. It has burnt itself out, and is extinguished. The best of Short-horn bulls have been sold the past winter at such prices that should induce farmers to purchase freely. We do not mean the fanciest sorts of fancy animals, but those of really better intrinsic value than these, because they have been more healthfully bred and reared, and are of strong, vigorous constitution, which many of the fancy ones are not. Good Short-horns are now to be procured at less than their actual value. Why this is thus we need not here say; we have heretofore pointed out why this result might be looked for, and it has come to pass. Forty-five to a hundred or two hundred dollars for a bull, is cheap enough to satisfy the most exacting farmer as regards cheapness, and it is greatly to be hoped that farmers will not miss the present opportunity of improving their stock, and beginning to raise a few of the best beef cattle, if only as an experiment.

The Short-horn is undoubtedly the most valuable beef animal in existence; that is, when crossed on native stock, and for producing grades. The grade Short-horn is a better beef animal than the pure-bred, if good judgment is exercised in procuring an excellent bull, and good cows to mate with him. This is fortunate, because it enables the farmer to enter this business of producing beeves with only a small expenditure of money. We have very frequently described the Short-horn, and have at times given many illustrations of the best animals. We give herewith a portrait of an English bred animal, which recently appeared in the London "Agricultural Gazette." It belongs to the class known as the Booth stock, that is, it has descended from stock bred by that renowned family of breeders. The engraving is a representation of a portrait, not a photograph, but it is singularly free from the exaggerations usual in artists' pictures. It represents "Royal Benedict," owned by T. C. Booth, Esq., and a very good typical Short-horn, and an excellent beef animal.

But, however excellent this breed of cattle may be, it cannot fill every place. There are localities where some other breed would be more profitable. In the grand meadows of the Western States and the rich bottoms of the great eastern rivers, the Short-horn will supplant every other breed, because it is there the most profitable. There are, however, hilly or upland districts, where the pasture is not so luxuriant; lighter, more active animals will be more profitable and preferable here, and also where oxen are frequently used for a period as draft animals, and are finally fed for the butcher. In these localities the Devon perhaps excels all others. This breed is the most ancient pure-bred race of domestic animals, and has held its place for hundreds of years. It is the best breed of all cattle for working oxen; it is strikingly handsome in form and color, and although it has not the heaviest carcass, the beef is of the best quality. As a beef animal it can never lose the first place in such localities as above mentioned. Notwithstanding the severe competition which exists in England amongst the beef breeds, and the excellence of the Short-horns, it often happens that the Devon wins the first prize there. This was the case at the last Smithfield Butcher's Fat Cattle Show, at which the Devon ox, whose portrait, from a photograph (originally appearing in the "Agricultural Gazette,") is here given, was awarded the first premium for the best beef animal. It is rare that so beautiful an animal is seen. Its square outline, filled in with a perfect roundness of substance, makes up a figure rarely paralleled. This ox was 4½ years old, weighed 2,128 pounds, and was given the first place as the best animal out of the large number of the various breeds shown. It beat many high-class Short-horns, not on account of their inferiority, for they were very good, but by its own extraordinary excellence. The picture is a good study of what a perfect Devon may be, and the fact that this favorite breed has lost nothing of its old excellence, but has merely been obscured for a time by the glare of popularity which has surrounded the Short-horns, should encourage those who already own Devons to cultivate their herds, and bide the time when a wave of deserved popular estimation shall reach them.

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Among the Farmers.—No. 16.

BY ONE OF THEM.

A Ton of Fodder for a Ton of Manure.

C. and I were discussing Prickly Comfrey the other day, when I told him that I thought it quite likely that if he could manure it as he does rhubarb, he would get as big a crop of leaves as its wildest advocates claim.—"That is just what I want," said he, "and if anybody will show me how to turn a load of manure into a load of dry fodder, it is all I want."—Sure enough, that puts the whole case in a nutshell—only the fodder must be good. It must impart no flavor to the milk, and it must dry easily, and keep well when dry, and be palatable, otherwise one might as well have the manure. Now as to this Prickly Comfrey, there is one question no one seems able to answer: "Will it become a weed and a nuisance?" We know it grows rampantly, lives through the winter well, and that an inch bit of the root will grow; so the more it is plowed and grubbed the more it will spread, for aught that I see. It is first cousin to common old-fashioned garden Comfrey, of which I know little or nothing except by hearsay. About this

Col. Frank Curtis makes a Statement.

He says that, many years ago, an old family servant, of the colored persuasion, was given a cottage and garden spot not far from the house. "Rheumatiz," and other pet ailments were duly ministered to by hot bricks and sand bags, and Comfrey, which was an indispensable article of the old negro's *materia medica*, had a conspicuous place in the garden. The old soul went where there is no more hard work nor rheumatic twinges; the cottage and garden were swept away by the march of events,—but the Comfrey—that "still lives." It has a constitution as if it grew at Marshfield. The more it is mowed the wider it spreads, and if it blossoms—then it disseminates. [We think that a sufficient reply to our correspondent's doubt is given on page 130, last month.—Ed.] So I think we had best handle our prickly blessing cautiously, and stand ready to pile salt-hay or straw upon it some day, and smother it, if it really sets out to dispute possession of the land with us. The problem after all is how to apply manure to the best advantage. So far in the experience of the world

The Cereals lead as Fodder Crops.

When we find something which will convert a ton of manure into more and sweeter and more nutritious fodder than Evergreen or Mammoth Sweet Corn, we shall have made a long stride in advance. If the new French method of preserving green corn fodder in pits for winter use, somewhat as the Germans preserve cabbage in the form of sauerkraut, is going to work well, it would be difficult to say exactly what in reason we could want more. There is something in this tanking of fodder crops, and I am confident it is not applicable alone to corn fodder—but think that all kinds of green feed may be preserved in some such way.

Pitting Green Fodder

is done by preparing tight pits or trenches, running the corn fodder through a hay cutter and into the pits, mixed more or less with straw or other dry fodder, according to the amount of moisture present in the corn, treading and packing the whole as tight as possible, and covering the mass so as to exclude the air except from the upper surface. Salt in moderate quantity is added upon the upper layer, I believe, and hay and planks are used as the covering, which is made to shed water. Active fermentation sets in, which causes the mass to settle, and the pit needs watching to see that it settles evenly, otherwise the air will enter, and the violent fermentation will keep up, and inevitably result in the decay of the whole mass; but if the exclusion of the air be reasonably effected, I conceive that the very slow fermentation which will go on, will furnish just carbonic acid gas enough to render the very incomplete exclusion of the air, by the topping of hay and planks, quite effectual. This is preliminary to a proper protection of the pits with earth for the winter. The earth is piled on as we cover root pits, and when the pits are opened, care is requisite again that they will be well stopped, so that air shall have but little access. We all know how it is with our cider barrels; so long as the fermentation goes on with sufficient activity to be perceptible when the ear is laid over the bung hole, there is no danger of the cider becoming vinegary and hard—but when this ceases, the air will soon get to the cider and spoil it, if it be not prevented. [A detailed account of this process, with engravings, will be found in the *American Agriculturist* for June, 1875, page 222.—Ed.]

Wooden Harrows and Clod-crushers.

When I first came into this neighborhood, wooden harrows were very common. We found one on the place and used it up. It was a large sized A-harrow, of oak throughout—I should say, white-oak beams and yellow or black-oak teeth. These were two inches in diameter, round, about ten inches long below the beam, and about four above. It was not of very heavy draft, and did fair work as a harrow, and when turned upon its back and used as a clod-crusher, it did admirably. I used to throw a log-chain over the outside teeth, so that the tracks of the teeth should be obliterated, and thus a capital finish was made. I am getting out some sticks for another one now, for we feel its loss. It is peculiarly adapted to light land, and to stubble-plowing, but is not so good on sward land.

When to Seed Down to Grass.

I have not a doubt that August is the best time. Grass sowed then looks well now, though it hardly started perceptibly before frost, and it appeared to grow but little after that. Even that sowed with late rye is starting now finely, and will stand a drouth much better than any spring sown grass possibly can. Oats seem to be so much a necessity to horses, that I have favored seeding down with that crop, and raise generally only rye enough for what straw we need. But last summer's experience is a warning. I met Mr. Barstowe, of Norwich, Ct., a life-long dealer in implements and seeds for farmers, and he appealed to me to know what time of the year it was best to sow grass seed. With the manner of Sir Oracle I said *August*,—and, it seems, confirmed some advice which he had just been giving. For my part I was very glad also to be confirmed in my view by so experienced an observer. Rather than sow grass seed with oats, and take the chances of the summer, I think it will pay to plow the oat stubble, and sow the grass and clover together as early as the oats can be gotten off the land.

Trees by the Roadside.

It is so much easier to cut down than to set out a tree, and so few people really know what a tree is worth, that I almost despair of ever seeing roadside trees valued and cherished as they should be. There is hardly a roadside fence or wall, against which trees, which would be both ornamental and useful, do not spring up. It would hardly do to let them grow by the wall, for they might throw it down, but we are quite too apt to let them grow by the fences. In fact, there is many a fence in this neighborhood made quite sustantial by the red cedars, which fairly hold it up. If these could be properly thinned out, and the brush trimmed out around them, it would be but a few years before they might be used as fence posts for either rail or wire-fencing. Trees of other kinds may be put to the same use, while at the same time they will grow large enough to shade the foot-path, and afford timber for fuel or other uses after a few years. The drafts which maples, tulip-trees, sweet-gums, basswoods, hickories, ashes, and probably many other trees, make upon the soil is very little, even when they stand in cultivated ground; but when they stand on the fence line of the highway, or better still if the road be wide enough, four feet from the fence, they will make no perceptible draft upon the fertility of adjoining fields. Elms, and several of the soft-wooded trees, poplars, willows, etc., are different, and, being surface feeders, send their roots into the soil to great distances. Still, even these are better than no trees by the roadside, and the elms are especially adapted to the vicinity of dwellings, and in village streets (but not too close, so as to over-shadow houses and cause dampness), for in such places there is much unused ground where the tree may send its feeding roots without harm to valuable crops. What we need is a public sentiment in favor of preserving and protecting trees along the highways. So soon as the roads about any otherwise unattractive neighborhood are well lined with trees, it gains a reputation at once as "picturesque" and "charming." If it is anywhere in the vicinity of large towns, the price of building sites goes up, and the people appreciate trees. There is a feeling through the land that village streets, or the streets of houseless "cities," should be marked by shade trees. So maples, dug in the swamps and trimmed to bare poles, are set out 50 feet apart on each side of the so-called *streets*, and generally die of neglect or goats the first season. Why should not we think just as much of trees along our pleasant winding country roads, as where we have a "city" laid out in rectangles?

Rats and Mice.

These vermin do not agree, and rats will soon drive mice away, so that when the latter get really numerous, and shrewd enough not to enter traps, as they often are, the incoming of rats may be hailed with gladness, for they are much more easily destroyed. Last winter a neighboring farm-house was nearly overrun with rats. They were undermining the foundations, destroying a basket or two of turnips and of apples every night. They would not look at traps; they were too numerous for cats; they could only be poisoned at the risk of destroying the chickens, for all ordinary poisons make the creatures sick, and they run out of doors and throw off the load upon their stomachs, and this it is that poisons the chickens. Some one mentioned the use of plaster of Paris (calcined gypsum), so I brought some up from town for them. It was mixed dry with wheat flour and Indian meal. The rats ate this; it *set* and *set*tled them, and we laughed over this mortar mortality; but it does seem cruel—no worse, however, than poisoning with arsenic.

Watering Manure Heaps.

If manure can be kept where it is always filled with water in which it is partly submerged, and which fills the rest of the heap by capillarity, it will neither heat too much nor lose anything by evaporation. It is usually not difficult to manage this in barn cellars, or under cover, provided it be built up over a tank or lie in a tight basin. In warm weather, however, evaporation goes on so rapidly from the spongy heap, that, unless water is pumped over it, or in some way be present in abundance, it will heat —burn—"fire-fang" tremendously. The treading down of the heap by cattle is alone not sufficient, unless the admixture of cow-dung be considerable.

We have been busy getting out manure lately, and I have been impressed with the fact, that it is not that which is least fermented which is really the best, but that in which there has been a regular but controlled fermentation. In one case, the cornstalks are still tough, the straw, swamp-hay, etc., saturated with liquid and incorporated well with the solid manure, but in no fit shape for plant-food. On the contrary, in those portions of the heap, where the strawy mass could absorb the liquid manure, and be sprinkled frequently by water thrown over the heap from that which leached into the low parts of the cellar, all the vegetable fibre was rotten and easily cut or broken, and at the same time there was no odor of escaping ammonia. The fermentation had obviously gone on almost all winter, though the surface was frequently frozen.

Will the Potato Beetle trouble us this Year?

I have been comparing notes with Mr. Henry E. Acker, of Woodbridge, and he gives me the following facts. The ground dug over for hot-beds and greenhouses in the fall of 1875 was found well stocked with the pupæ; that dug over last autumn contained few, if any. In digging over the ground in the greenhouses last year, the beetles or the pupæ were frequently met with, this year none are observed. When he set out his tomato plants last May and June, the first setting were almost all destroyed, consumed by the beetle in one stage or another, and other plants to the number of several thousands had to be provided. As soon as a good stock had been established, there was no more trouble, and hardly a beetle or grub was seen upon the plants the rest of the season. Mr. A. raised no potatoes, but kept watch of the insects, and was surprised to see so few during the latter part of the season. In fact the only place where he observed them in considerable numbers, was along a stretch of beach, where they were washed up, and remained alive for a long time. It was the experience of many potato-growers that after the drouth became severe, the beetles were no more troublesome. The question is, was it the drouth, or were the pests discouraged from some other cause. I think those who refrain from planting potatoes in about the usual quantities, either from fear of the beetle's ravages, or on account of the high price of seed, will do a very foolish thing.

Home-Made Phosphate.

A Subscriber, Schuylkill Co., Pa., gives the following method of making a bone fertilizer. I have used for some years, with good effect, a fertilizer made as follows: I get annually a few tons of raw bones, and burn them with wood, when they become very brittle, the grease being extracted. I then break them small, either with a heavy mallet hitched with a spring-pole, or run them through a small mill with horse-power; in this condition they are not much harder to grind than coffee. I then pack the ground bones in layers in old oil-barrels, and pour upon each layer, stirring as mixed, enough dilute sulphuric acid, (oil of vitriol), one part acid to three parts water, to moisten them. In a few weeks all the bones are decomposed, and the mass is dried by using a little gypsum (land plaster), so as to be easily shoveled out. By this method the farmer can manufacture his own superphosphate, not only at a minimum cost, but with absolute reliability." [This process is upon the whole the most simple one by which the farmer can utilize accumulated bones. It is not alone the grease that is lost in burning, but the gelatine is also more or less completely consumed. Fresh bones contain, on the average, about one-third their weight of animal matter, *ossein*, which, by the action of water, is converted into gelatine or glue. This contains nitrogen, and by decomposition affords ammonia, and a superphosphate thus prepared will be destitute of ammonia; but it will be cheaper for the ordinary farmer to supply ammonia in guano, fish-scrap, or other commercial fertilizer, than undertake to convert raw bones into superphosphate. Those not accustomed to handling sulphuric acid, should use great caution. When superphosphates made on the farm were first proposed, accidents were so numerous, often so severe as to cause the loss of eyes, that we discouraged the attempt to make them, and would now advise only those who can use proper care to do so. Sulphuric acid is exceedingly corrosive, and should be handled with a full knowledge of the fact. A drop thrown into the eye will be likely to destroy that organ. It should be poured from the carboy slowly and gently, to avoid all gurgling. Stone-ware or glass vessels, only, should be used for strong acid, and unpainted wooden ones for diluted acid. A stone-ware pitcher, of known capacity, will be found the most convenient vessel. In diluting the acid, measure the required quantity of water into a tub or bucket—three, six, nine, or whatever number of pitcherfuls, of course leaving room for the acid to be added. Drain or wipe out the pitcher, and fill it with acid; then pour the acid in a small, steady stream into the water, until a fourth or smaller part has been poured in; then cease pouring, and with a stick stir the mixture; add another portion of acid, stir again, and so on, until all the acid is added. When the acid first strikes the water, there is sometimes a sputtering, and this, then and at all times, one should be on his guard against. When the acid and water combine, the liquid becomes very hot. Have at hand some old soft rags, and if any acid falls upon the skin, immediately wipe it, or rather *sop* it up, before washing the spot. It is well to have at hand some water of ammonia, or a solution of sal-soda, to neutralize any acid that may accidentally fall upon the skin or clothes. It is better to wear clothes that can not be spoiled. A little dust, a chip, straw, or such matter, will cause the strong acid to become dark-colored, but does not injure it.—Ed.]

A Dairy Barn for Twenty-five Cows.

A correspondent requests a plan for a barn for a dairy of 25 cows. The arrangement of a barn for a dairy should be well considered, as regards saving of labor in milking, feeding, and cleaning, all of which are of great importance, as well as regards the first expenditure of money for the building. It is a frequent mistake that the buildings of a dairy farm are more substantial and costly than necessary. Room is wanted for the convenient management of the cows, but there is no necessity for elaborate construction, or for heavy and costly frames for the buildings. Floors are unnecessary, in fact are not advisable, if of wood; light paving of small cobble-stone, or concrete of gravel and lime are no more costly, and greatly more healthful and cleanly, and perfectly free from vermin. The whole series of buildings for a dairy farm, may be made of a succession of cross-bents, connected together by girts and plates of light timber. The use of the horse-fork dispenses with the necessity for high, wide barns for storing hay and fodder, and in place of these there may be long low sheds, along the peak of which the horse-fork may be carried on its travelers, and beneath which may be the cow stables, milking sheds, calf pens, horse stable, and wagon sheds. The form of the bent to be used is shown at fig. 1. It is 20 feet wide, 16 feet high at the posts; the timber for the sill and posts is 8x8, that for the girt is 6x8, for the braces 4x4, for the rafters 2x6, and a collar-girt of 2x6 is used to strengthen the rafters, and to support the carriage for the hay-fork. In building with these sections, the sills may be bedded in concrete, either wholly or partially, or may be laid upon the concrete, but in the latter case should be so fitted that no water or air can penetrate beneath them, to cause rapid decay. To wholly bed them is the best plan; then an even, unobstructed floor may be made from end to end of the building. For the plan of the building, we suggest that in figure 2, of which an isometrical view is given in figure 3. On the left is the milking shed, open in the front or to the yard; from this is a passage-way to the stable, which is provided with 25 stalls, or stanchions, as may be preferred, each 4 feet wide, and a close pen for the bull at the end, 8 feet by 10. The stable is arranged with a feed-passage, 6 feet wide, in front, a feed-trough, 1½ foot wide, a floor, 4½ feet wide, a manure drop and drain, 2 feet wide and 6 inches deep, and lastly a passage, 6 feet wide, in the rear, thus occupying the whole width of 20 feet. The nearest corner of the second wing is occupied by the feed-room, with cutting-box, mixing-trough, pump, feed-bin, feed-barrow, and other needed furniture, and is 20 feet square, which will give ample room. From this a door opens to the feed-passage, another opens from the feed-passage into the yard. The horses in the stable adjoining can be fed from the feed-room. Beyond the horse-stable, with its two double stalls, is the wagon-shed; then the calf-pen, arranged with separate close stalls for each calf, so that no two calves may ever be kept together; a very important precaution, by which many calfish tricks and vices may be prevented. A yard, with manure-pit, covered with a roof, if wished, is in the center, and feed-racks are placed on either side of the yard. A tight fence encloses the whole. Over the calf-pen may be a storehouse, poultry-house, workshop, or any other needed apartment, and an outer stairway and door may be made to these, or this may be made in the wagon-shed. The whole length of the sheds should be 260 to 300 feet. The main stable will be 110 feet, and the wings should be at least 75 feet each. Nearly the whole of the upper floors can be used for

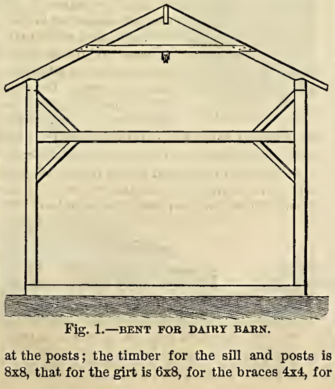


Fig. 1.—BENT FOR DAIRY BARN.

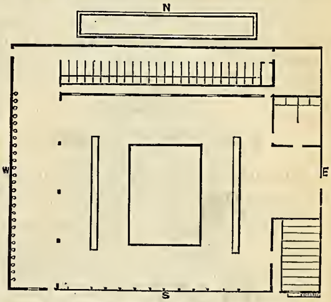


Fig. 2.—GROUND PLAN OF DAIRY BARN.

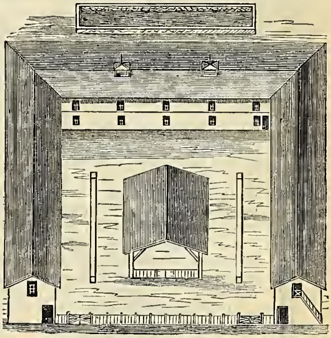


Fig. 3.—ISOMETRICAL VIEW OF DAIRY BARN.

for storage of hay, fodder, and feed. The whole should be enclosed with upright boards, battened on the joints, and the material will cost about $500. The timber in each bent, of which there would be 25, is about 400 feet, and 9,000 feet of boards would be required for the walls. Two hundred and fifty dollars ought to pay for the labor of building, and, when finished completely, if at a cost of $1,000, it would be a remarkably cheap structure, considering its usefulness and capacity. In the rear of the main building a pit should be provided for the manure, as shown in the plan, which must necessarily go out at the rear.

A New Post-hole Digger.

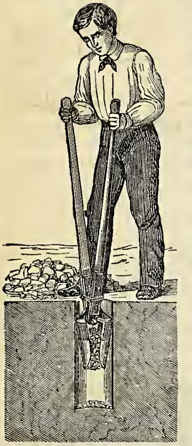


Fig. 1.—AUGER IN USE.

When at the Centennial Exhibition, we noticed a quite new post-hole digger, which excelled any we had previously seen, for the ease and rapidity with which it could be worked. The digging of post-holes with picks, spades, or shovels, is a manner of doing a work with the worst possible tools, nevertheless we had no very good substitute for these inconvenient implements, until the inventor of this machine hit upon the very valuable idea, which he brought into practical use. With this digger, a hole may be made of the smallest size needed, without taking out more earth than may be necessary; the hole, in fact, may be made so small that the post may be driven into it, and so set very firmly. It consists of a double handle, made to open or shut upon a pivot, with a scoop or round pointed half-round shovel upon each half. When closed, it appears as at figure 2, in which condition it is forced into the ground by repeated thrusts, in the same manner that a pointed bar may be driven. When sufficient earth has been loosened to make its removal necessary, the blades are pressed into the loose earth, and then brought together by opening the handles, as at figure 1, when the earth held between them may be lifted out and deposited on the bank. This is repeated until the hole is deep enough. Holes can be dug in any kind of soil, amongst stones, in coarse gravel, or in earth that is saturated with water, or even under water. The tool may be used for sinking or cleaning wells, for making holes for setting plants or trees in gardens, as well as making post-holes, and many made with long handles are in use for setting telegraph poles, for which holes 7 feet deep are required. It is known as the Eureka Post-hole Digger, and its novelty and plainly apparent utility made it a conspicuous object of curiosity for a small crowd of people at the Centennial, where it was very vigorously worked by its exhibitor. The length of the blade is 9 inches, the whole length of the tool is 5 feet, the weight is 9 pounds, and it is obvious that no stooping is necessary in using it.

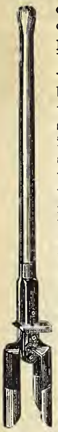
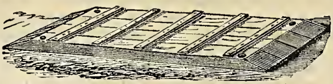


Fig. 2.

A Useful Clod Breaker.

There are many clod-crushers in use that are more or less effective, but some of them require for their construction materials which are not always easily procured. One for which the stuff can be found almost anywhere, may be made of planks fastened together by cleats, as shown in the engraving. The planks should be thick and heavy; three inch oak planks would not be too heavy. They may be six or eight feet long, and the floor three or four feet wide. The forward ends of the planks are beveled upon the under side, to enable it to ride over the surface easily. The cleats are fastened underneath by carriage bolts, and consist of narrow strips, placed about a foot apart. When the crusher is drawn over a cloddy surface, the edges of the strips either crush the lumps, or drag them up and cause them to roll underneath the heavy planks, by which they are broken up. This drag may be used for covering seed sown broadcast, leveling drills, covering corn, and for many other purposes which will suggest themselves. It may be drawn either way if both ends are beveled.



CLOD-CRUSHER (SHOWING UNDER SIDE).

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

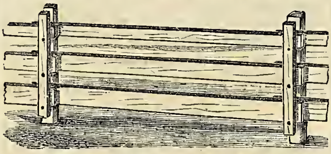


Fig. 1.—PANEL OF A BAR FENCE.

A BAR FENCE.—Various forms of post and board fences are in use, but that shown in figure 1 has several good points, and is not open to any serious objections. Common fence posts are used, and are either set or driven; when 14-foot boards are used, the posts are placed 13 feet apart, from centre to centre. Short inch boards, four or five inches wide and about four feet in length, are nailed within two and a quarter inches of the side of the post by three large nails, from 4½ to 5 inches in length, which is readily done by placing a block of that thickness between the post and the strip attached to it, while the nailing is being done. The bars or fence boards rest upon these nails. A sectional view is given in figure 2, showing how the boards rest upon the nails. The advantages of this fence are its cheapness; that any one section is easily removed, for passing through with a team, or stock, etc.; that, should the posts heave, they are readily driven in the proper position without the danger of splitting the boards or breaking the nails; and, should a post or board rot or be broken, another can be substituted without much inconvenience. [In place of the nails suggested by Mr. Snooks, we would rather use half-inch bolts or spikes, which would be very much more durable.—ED.]

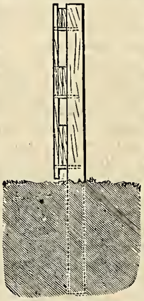


Fig. 2.—END VIEW.

WATERING PLACES FOR STOCK ON LEVEL LAND.—It is frequently the case that there are underdrains of living water passing through level fields, in which there is no water available for stock. In such a case, a simple plan for bringing the water to the surface is shown in figures 3 and 4, in which is shown an underdrain of stone or tile, a pipe of one or two-inch bore of wood or tile, and about 15 feet in length, is laid level with the bottom of the drain, and connecting with a box one foot or more square, sunk into the ground. If the soil be soft, the box is surrounded with stones as shown. A low place or small hollow at some point along the drain is selected for the watering box, or, should the land be nearly level, then with plow and scraper an artificial hollow is soon made at any point desired. Two fields may be thus easily watered by making the box two feet in length, and placing it so that the fence will divide it.

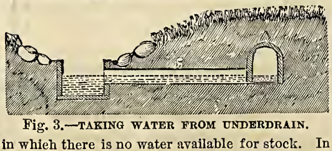


Fig. 3.—TAKING WATER FROM UNDERDRAIN.

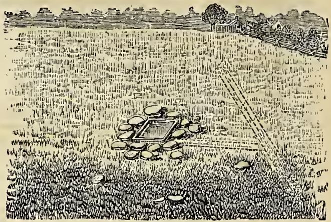


Fig. 4.—THE WATERING PLACE.

HOW TO LEVEL WITH SQUARE AND PLUMB-LINE.—The common carpenter's square and a plumb-line may be made to serve as a substitute for the spirit level for many purposes on the farm or elsewhere, when a level is not at hand. The manner of getting the square in position to level a wall, for instance, is shown in figure 5. A piece of board, three feet in length, having one end sharpened, is driven into the ground for a rest; a notch is made in the top of the stick large enough to hold the square firmly in position, as shown in the engraving. A line and weight held near the short arm, and parallel to it, will leave the long arm of the square level. By sighting over the top of the square, any irregularities in the object to be leveled are readily discovered. A method to find the number of feet in a descent in the ground is illustrated by figure 6. The square is placed as before directed; then a sight is taken over and along the upper edge of the square to a pole or rod placed at a desired point. The point on the pole which is struck by the line of sight shows the difference between the levels of the two places. This method will be found applicable in laying out drains, where a certain desired fall is to be given to the ditch.

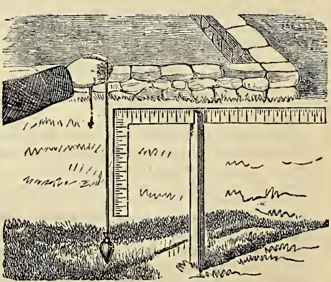


Fig. 5.—MANNER OF LEVELLING A WALL.

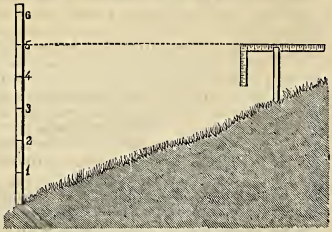


Fig. 6.—MEASURING A SLOPE WITH A SQUARE.

Portable Pig Pens.

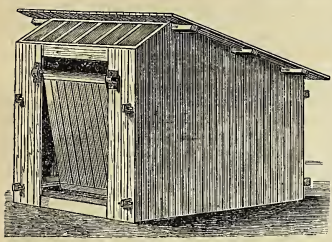


Fig. 1.—THE PORTABLE PEN COMPLETE.

Mr. L. N. Bonham, Oxford, O., sends a sketch of a portable pig-pen, illustrated by the accompanying engravings. He writes: here we raise Poland-China or Magie hogs, and ship large numbers to all parts of the country for breeders. We give our stock good care, looking to their comfort and health. So free have our herds been from that terrible scourge, hog-cholera, that some breeders think that it is like typhoid fever, among mortals, only nature's avenger for the careless and wanton defiance of her common laws of health.

I was led to devise this plan for a pig-house, in my desire to secure comfortable quarters on fresh sod for my breeding sows and their young litters, and so satisfactory is it, that many neighbors have already adopted it. By this plan we secure a clean place, fresh grass, and pure air, and more sunlight in the bed than is gained by the usual sheds or houses provided for pigs. The open front faces the south; the sky-light slopes to the south; the front may be opened or closed according to the weather, and if it is wished to build very cheaply, glass is omitted altogether, and a movable cover put over the front opening of the roof, which can be open in sunshine, or closed if cloudy or stormy.

One man can remove it from place to place, so as not to allow it to remain on one spot so long as that the bed may become dusty, or the grass in the vicinity of the house tramped to death. By this plan families are kept separate, and the sows farrowing are not disturbed by the squealing of neighboring pigs, and consequently it will prevent much loss at this critical stage of the young pig's existence.

This pig-house, all complete, (see fig. 1), will cost less than $3, if a shutter be used on the sky-light, instead of the sash. The roof is made of good flooring, and laid in white lead and well painted. Dressed stock lumber is used for the siding; yet I have some sided with tongued and grooved flooring, and think it the best and warmest. The rails for roof and ends are 2x2 pine or poplar, and rails for front and back 2x4. The bottom rails of the back are set 8 inches from the bottom, and the siding is nailed on the 2-inch face, which gives, when set up, a *safe-guard*, 4 inches wide, and prevents the sow from crushing pigs against the siding. The bottom end rails are placed 6 inches from the bottom to pass the above. The rails of the front are set on edge, and the two side or end pieces are nailed on the 4-inch side, projecting one inch over the ends of the rails. The bottom rail keeps the heading from working out, and is not too large for a sow to pass with ease.

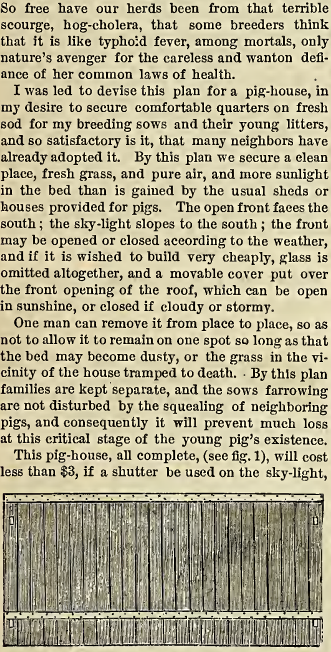


Fig. 2.—BACK OF THE PORTABLE PEN.

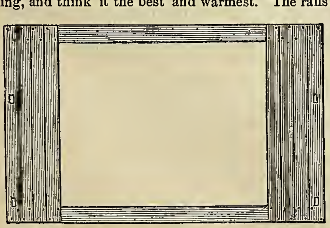


Fig. 3.—FRONT OF PORTABLE PEN.

After making the back, fig. 2, and front, fig. 3, the side rails in fig. 4 are put in the holes (figs. 2 and 3), and the draw pins driven; the siding for the ends, fig. 4, is put on, up and down, the slope cut for the roof and sky-light; the notches are cut in the ends, for the rafters; the rafters are cut 4 in. longer than the house, and are laid in the notches so as to project two inches at each end; the roof is then raised upon the rafters.

We find here, that houses 5x6 ft. are large enough for young sows, and 5½x7 ft. large enough for the largest. In stormy or cold weather, I have a movable front, which is set in with the swinging door, and held in place by two buttons. When my spring pigs are large enough to wean, I remove my houses from my grass lot to some less conspicuous place, and allow the grass to recover and freshen up. If the houses are not needed in the wood-lot or field during the summer, I take them down and put them under cover. I can thus promote the comfort and health of my pigs, and secure neatness on the farm.

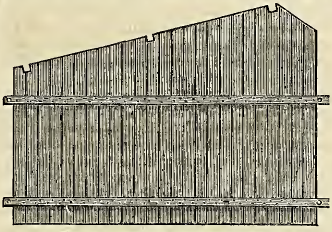


Fig. 4.—END OF PORTABLE PEN.

A New Cotton Seed Huller.

A Method of Utilizing the Seed for Feed—Valuable to every Cotton Grower.

The importance of utilizing cotton seed on southern farms, as feed for stock, has been frequently referred to in these columns. The fact that the kernel of the cotton seed is the richest of all grain food, renders it not only desirable that it should be made use of in feeding, but makes it imperative as a matter of economy, that southern farmers should not waste this, one of their most important resources. To make this seed of use as feed, it must be deprived of the hulls, and hitherto there has been no perfect means of separating the kernel from the indigestible and injurious envelope. This may now be done perfectly and cheaply by the use of the very simple machine here illustrated. This is Kahnweiler's Cotton Seed Huller; a general view of the machine is given at figure 1, and a section showing the construction at figure 2. Some very effective improvements have been made in this machine, which we have recently examined for the information of our readers. These improvements consist of the use of sharp rotary knives, which revolve in the center of the machine. In their movement, the edges of these knives pass close to the edges of stationary knives, and the seed being led into the space thus left, which may be readily adjusted, increased or lessened, the husk is cracked or cut and broken, and the kernel disengaged. The seed then falls into a separator, where the kernel is freed from the cottony husk, which is discharged one way, while the kernel goes in another direction. The husks, thus separated, serve admirably for bedding mules or for use in the cow-pens, or may be put at once into the compost heap. The hulled seed is fit for feed for horses, mules, cows, calves, sheep, pigs, and poultry, all of which thrive well on it when it is judiciously given. Being a very rich food, only a small portion of it should be given to an animal at one time, and being the reverse of laxative in its effects, it is frequently found very useful in a medicinal way. By setting the knives more closely, the seed may be again passed through the machine and ground into meal; or the machine may be used for grinding corn, fine or coarse, as may be desired. It will grind the whole cob more finely than can be done in a burr-stone mill, and it has also been used for grinding dried roots and hulling coffee. A small machine for hand use is capable of grinding or hulling 5 bushels per hour, and a larger one, driven by horse-power, has three times this capacity. There have been few machines offered to southern farmers of late that may be turned to so useful a purpose as this.

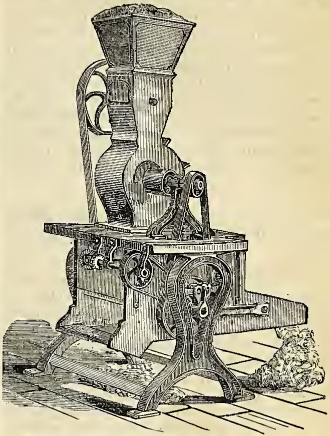


Fig. 1.—EXTERIOR OF COTTON SEED HULLER.

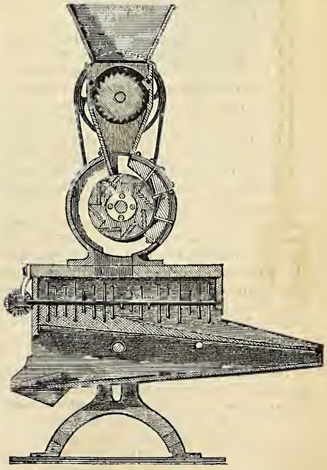


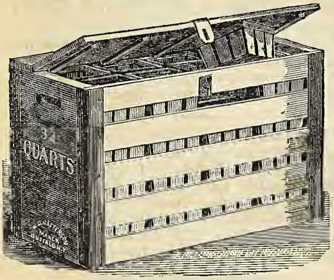
Fig. 2.—SECTIONAL VIEW OF HULLER.

Manurial Value of Food.—A most important investigation has been begun by the Royal Agricultural Society of England, with reference to the actual manurial value of foods consumed under different conditions. Heretofore, the laboratory has been the field of investigation, now the field is to be the laboratory. This series of actual experiments will be watched very closely, and with the greatest interest, although many years must elapse before any decisive results are reached. It has been difficult for farmers to believe what has been taught by Messrs. Lawes & Gilbert, viz., that the value of the manure made from a ton of clover hay, or wheat bran, may be more than the actual value of these foods in the market; if these experiments show by actual practice that it is so, we may look for a great improvement in our methods of farming, if farmers can be only brought to accept and practice upon it. Experiment Stations, in which theories may be brought to the test of practice, are what we want, and now one of the best farms in England will be converted into a great Experiment Station, to verify or disprove the teachings of the chemists.

Preparation and Work for the Berry Season.—Good Fruit Brings Good Prices.

In the course of the season we are in the way of seeing a great deal of produce; by taking different streets to and from the office and the boat upon which we make part of our journey to our home in the country, we can pass many of the principal commission houses, and find it interesting and instructive to examine the arrivals of fruit and vegetables from all parts of the country. The effect of seeing so much produce, is not to impress us very favorably with the good sense of the majority of producers. While the dealers send to their customers circulars enforcing the fact that their returns will depend upon the quality of their produce, and the condition in which it reaches the market, and the same has been reiterated by the *American Agriculturist* and other papers, the fact nevertheless remains, that much of the "stuff"—as the dealers properly call it—should never have left the place on which it was grown.

Every one who sends fruit to market, should understand that it is sold by its *appearance*. It is not the name of the variety or its flavor that sells it, but it must look tempting to the buyer. He must consider two things: his packages, and his packing, and we will consider these with reference to strawberries, the first fruit, and one which is already being forwarded from southern localities. The customs of the markets in different cities vary considerably, and the present remarks apply to New York, where strawberries are never, as in some Western markets, sent in bulk or large drawers, and measured or weighed out to the buyer.



A POPULAR BERRY CRATE.

Baskets and Crates, of whatever pattern, must have one thing well provided for—ventilation, and the greater the distance the fruit is to be sent, the more important this becomes. As to the shape of the basket, whether round or square, each has its advantages, and growers are about equally divided in practice. Fruit shows better in round baskets, while square ones pack better and carry safer. Recollect that *good* fruit will sell in either. Ventilation, freedom from any edges that may cut the berries, and full measure are to be sought for in any basket, and in the use of old baskets neatness must be regarded; fruit stains can not be avoided, but dust, adhering bits of bruised fruit, and other blemishes, may be. In selecting the crate, after the prime consideration—ventilation—size is of next importance; those who handle the crates are human, and will set a heavy one down hard; 60 pints and 36 quarts are as many as a crate should ever contain, and a less number is preferable. The crate made by N. D. Batterson, Buffalo, N. Y., has met with much acceptance by the growers in Western New York, and elsewhere, as combining strength, it being well secured at the corners, with lightness, and proper ventilation. The engraving shows its structure. When the crates are new they need not be painted, so far as appearance is concerned, but they should be painted when they become soiled.

Marking is done by a stencil-plate, which is much preferable to a card tacked to the crate. Whatever the manner of marking, it should be done so distinctly that there will be never, at any time, any difficulty in ascertaining at once to whom the crate belongs, and to whom it is going.

Picking.—No matter the excellence of the variety, no matter what pains may have been taken in cultivation to bring the fruit to perfection, the price it will bring in the market will depend largely upon the person who picks it. It is a common notion that anybody, even a child, can pick strawberries; while some children may be taught to pick well, the operation is one that requires "skilled labor," and the farther the fruit is to be sent, the more care is required. Secure good pickers, and exercise a constant supervision over them. A picking stand is a frame to hold 6 quarts or 12 pints, and has a handle to carry it by. A picker takes one or two of these; in a very hot day, or one with a strong drying wind, the fruit should be got under cover as soon as possible, and one is better than two. The picker usually makes two sorts, and has a spare basket besides, putting the largest and finest berries into one basket, and those of a second size in another; this, however, depends upon circumstances; if the fruit runs evenly, but one quality is made. The spare basket is for the over-ripe fruit, which should be removed from the vines before it decays, and by no means go with the rest. The picker of fine fruit must not hold it in the hand until that is full, but deposit each berry carefully. The stem of the fruit is taken between the thumb and fore-finger nails, and severed; the berry must never be pulled. The fruit in each basket must be of even quality from the bottom up, and the top well rounded up. All over ripe, misshapen, or otherwise imperfect berries, must go in a basket by themselves. The pickers should be followed to see that no stalks are broken, and no good fruit missed. The condition of ripeness must be considered by the grower, and this will depend upon the length of time the fruit is to be in transportation, and will vary from being light-colored on the under side, up to full color—but never, no matter how near the market, should the fruit be *soft*. Over-ripeness often causes much loss, the fruit falls down, and appears in bad order when opened. Recollect that a single over-ripe berry spoils the looks of the basket in which it is put, and the appearance of that basket hurts the sale of the crate.

At the Packing Shed.—Have a shelter of some kind near at hand. As soon as the stand is filled, let it be taken there at once, out of the sun and wind. If assorted in picking, finish off by turning the hulls down, but never top off with the largest fruit. If not properly picked, each basket must be emptied, assorted, and refilled. Do not put the baskets into the crates until the fruit has cooled all it will. The fruit should be taken to the railroad or steamer in a spring wagon, and it will be well if a careful person can see to loading it upon the car or storing it on the boat.

The Fountain Pump or Sprinkler.

It is within but a comparatively few years that any attempts have been made to supersede the garden syringe by some form of hand-engine or pump. Within the last 20 years the substitutes for the syringe have been numerous; these have had for their object the throwing of a continuous stream—while the syringe must be alternately filled and discharged. If one could get together all the various contrivances for throwing water, some of which bear such high sounding names as "Hydropult," "Aquajet," etc., it would form a curious collection. It would be found that while these avoided the intermittent and slow action of the syringe, the weight of the substitutes was many times greater, and the multiplication of parts, addition of valves and air chambers, rendered them liable to get out of order, and the popularity of many was short-lived. Still, when invention gets on the track of a desired article, no matter how many the failures, the needed thing is sure to come at length. We do not see how a pump can be contrived that will take the place of the syringe any more effectively than does that known as the "Fountain Pump," invented and made by J. A. Whitman, Providence, R. I. To all outside appearance it is a piece of brass tube, with a supply hose at one end, and a nozzle at the other, or the nozzle may be replaced by a "rose," to convert it into a sprinkler. The interior structure is so simple that it is almost impossible to get it out of order; we have one which, after such usage as different men and boys are apt to give such an implement, is as good as ever. It is quite as light as the ordinary syringe, and for all greenhouse purposes will answer as a complete substitute, with the great advantage of giving a continuous stream. Its use is not confined to the greenhouse, but for out-door work is very effective; for applying any insect-killing liquids to plants of various kinds, we have found it especially handy. Aside from its value as a horticultural implement, the manufacturer states that there is a large demand for it for various domestic uses, as suggested in the engraving on page 180. Wherever a stream of water is to be applied with considerable force, as in cleaning side-walks and steps; washing carriages and windows, and all such uses it is convenient and effective. Another use should not be overlooked. A small stream, at the right spot, and at once, may prevent a destructive conflagration, and it is claimed for the "Fountain Pump" that experience has shown it to be a most valuable fire-extinguisher.

Talks on Farm Crops.—No. 3.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"Are you going to use superphosphate on your corn this year?" asked the Deacon.

"No. If I use artificial manure at all—and I have used them more largely than any other farmer in town—it will be on crops which command a relatively higher price than corn."

"What crops may those happen to be?" said the Deacon, in rather a sarcastic tone. "I think a good crop of corn and stalks pays about as well, taking one year with another, as any crop we grow."

"I think this is true, but that is not what I alluded to. There are many other crops, in proportion to the amount of nitrogen and phosphoric acid which they contain, command a much higher price. For instance, a bushel of wheat contains but little more phosphoric acid than a bushel of corn; but it usually sells for fully double the money. And so of barley. A pound of good barley is usually worth much more than a pound of corn. If we raise crops, therefore, with purchased phosphates, their application to wheat and barley ought to pay better than when applied to corn. Still more is this true in regard to potatoes. A bushel of corn contains nearly three times as much phosphoric acid and five times as much nitrogen as a bushel of potatoes, while potatoes are usually worth almost as much as corn, and sometimes a good deal more."

I am aware that this is only one aspect of the case; and that the principle is not of general application. We greatly need a series of accurate experiments with chemical manures on Indian corn, as compared with wheat, barley, oats, potatoes, etc. Until we have such, we must work on in the dark, guided merely by common experience and observation. Indian corn is as much a puzzle to me as the effect of plaster as a manure. It is difficult to find any theory that will embrace all the facts.

Many years ago, when a boy in England, I was drilling in turnips. A shower of rain stopped me and the remainder of the field was not sown until the next day. The crop on the one part was far better than on the other, though the preparation and manuring were otherwise precisely alike.

Indian corn is equally sensitive to incidental conditions. We sometimes get a great crop when we expect a poor one, and still more frequently we get a poor one, when we expect a good one. The Squire, last year, had a wonderfully fine piece of corn on an old pasture that the year previous was completely covered with thistles. There was nothing peculiar about the treatment. The land was carefully plowed in the fall, with a jointer-plow, harrowed thoroughly with a Randall Pulverizer, and the corn planted in hills 3½ feet apart. The corn came up well, grew well, and continued to grow. In July, I passed the field one day and could hardly believe that such a crop could be grown on such land. But there it was, a dark-green, luxuriant mass of vegetable growth, the admiration of all.

Such a crop is calculated to enforce the importance of the right mechanical condition of the soil and of planting in good season.

"I am glad to hear you say that," said the Deacon. "You would make a better farmer if you would get rid of your chemical nonsense."

"I am not so sure of that," said I, "but the corn crop is certainly well calculated to teach an agricultural chemist humility."

Of course corn cannot grow without food. But the main practical point is to get the soil dry, warm, fine, and mellow, with the requisite degree of moisture to cause a prompt germination of the seed. In corn growing a "good start is half the race."

Mr. Crozier's plan of raising corn on ridges with manure underneath, as turnips are grown in England, can never be generally adopted here. Our seasons are too short, and work is too pressing. In this section nine-tenths of our corn is planted on sod land on which the plan cannot be adopted.

Last year the Deacon planted on sod, and I planted in the adjoining field on stubble, the land having been in corn the previous year. The Deacon beat me very decidedly, though I had a fair crop.

"Corn almost always does better," said the Deacon, "on sod land than on stubble land, and I do not believe in your plan of raising corn after corn."

"Neither do I, as a rule, but the land was foul, and I wanted to cultivate it two years in succession in hopes of getting rid of the weeds and making the land mellow. When I get the land down in clover and grass again, I hope to see the good effect of this two year's thorough cultivation."

I adopted a plan last year which worked even better than I expected. My land varies greatly.

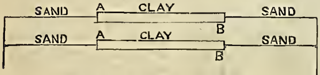


Fig. 1.—PLAN OF PLOWING.

Three-fourths of a field may be sandy and one fourth rather a heavy loam. On these "clay-spots" it is almost impossible to get the seed to germinate. They need to be plowed and harrowed and rolled again and again to get them into a fine mellow condition. We have not time to go over the whole field, and if we had, the extra work on the lighter portions of the field is entirely unnecessary, and so I adopted the following plan: We prepared the field for planting, and then marked it out in rows, 3½ feet apart. Then we took a plow with a good point on it, so that it would take hold of the hard soil, and put it in six or seven inches deep at *a*, on the left-hand side of the mark, and about seven inches from the mark, and threw up a good furrow as far as the clay-spots extended. When we came to the lighter parts of the field, that were already fine and mellow, we turned again at *B*, and threw the furrow back again into its place. In this way we plowed 14 or 15 inches of the land directly under where the corn was to be planted. Figure 1 may assist in giving an idea of the plan.

After the plow, the roller was passed along the furrows, and pressed them down; and, when necessary to crush all the lumps, we also ran the roller *across* the furrows. The land was thus left almost as flat as if it had not been thrown up. Mark out the rows again, if necessary; but as we drill in our corn with a grain-drill, this was not needed. The Deacon still sticks to his plan of planting in hills 3½ feet apart each way. Sometimes I do so also; but the temptation to put the crop in with a drill is so strong, that three years out of four I drill in the corn. It is quick work, and you can put in the seed as fast as the land is prepared; but with hills, you must get the whole field ready and marked one way, before you can begin to plant at all.

I have not fully made up my mind as to which is the better plan. If the land is rich and smooth, I think drilling will give fully as much sound corn, and at least one-quarter more stalks, and of better quality. But on rough land it is a decided advantage to be able to cultivate the land both ways.

"I know," said the Deacon, "that you will claim that it is no more work to keep the land clean, but at any rate you will admit that it is more work to *cut up* the drilled corn than corn in hills."

This is true, but I am in hopes that we shall soon cut up our corn with a self-raking and self-binding reaper, that will tie it in bundles which can be conveniently loaded on a wagon and drawn to a ten-horse power steam husking-machine, that will go round from farm to farm. But we may have to wait a few years longer for this.

A correspondent asks me to give my plan of raising mangel-wurzel. I have not time to do so now. The best plan for him to adopt, I think, is to plow under a good coat of rich, well-rotted manure. Or if he has not enough manure, sow say 400 lbs. of nitrate of soda and 200 lbs. of superphosphate per acre; or 500 lbs. of rectified Peruvian guano, containing 10 per cent. of ammonia. If he is anxious to raise a great crop, he may double the quantity.

If sod land, I would plow under the barn-yard manure, and sow the artificial manures on the surface and harrow them in very thoroughly. And do not forget to roll the land. This is very important. Then mark out the land in rows, 26 to 30 inches apart. Then with a dibble, make holes, from one to two inches deep, and 12 to 15 inches apart in the rows, and drop in two or three mangel-seeds, and go over the piece again with a roller. This is all. It is less trouble than you may suppose.

This plan saves seed; it is less work to thin out and hoe the crop; and you can soak all the seed in soft water for 24 or 36 hours before planting. This in itself is a great advantage, for if the ground is mellow, the plants will be up in a few days, and you can get the start of the weeds. When drilled in, you cannot soak the seeds, and if the land is dry, the seeds may not start for two or three weeks.

"If you soak the seeds, they may germinate, and then die for want of moisture," said the Deacon.

"True, but I would rather take this risk, as you can plant again, or what is still better, set out cabbage plants, as soon as the rain comes."

"I can indorse that idea," said the Deacon, "for you had a noble lot of cabbage last year that you set out among the mangels. But it is not always as easy to sell cabbage as it was this winter."

"We did not raise them to sell," I said, "but set them out for the ewes and lambs, or cows, in spring. They brought such a high price, however, in market, that I sold the best of them. In raising cabbage for stock, the mistake we have made is in planting the large varieties. Size has a wonderful attraction; but I have become thoroughly disgusted with the very name of Mammoth Cabbage and Giant Mangels. We want solid heads of cabbage, and firm, smooth mangels, that will keep until June. In other words, we want quality, rather than quantity. The farmer who is going to raise two or three acres of mangel-wurzel, should sow an ounce or more of some good variety of winter cabbage. He will then have plants to fill up vacancies, and if there are no vacancies, he can usually dispose of the plants, or set them out by themselves. If not wanted in market, the ewes and lambs, or cows, will be very grateful for them next spring.

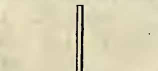


Fig. 2.—DIBBLE.

I used to make a dibble with five or six pegs in it, but I find that you can do the work easier and just as fast with one that has only three pegs in it. It can be made in a few minutes. Take a piece of pine scantling, 2x2, and 33 inches long. Bore a ¾-inch hole in the centre, and another hole on each side, 15 inches apart. Put a rake or hoe handle in the center hole, and a couple of pegs in the other holes, and let them project 2½ to 3 inches below. Sharpen to a rather blunt point, and it is ready.

As before said, the ground should be marked out in rows. You take the dibble in the right hand, or in both hands, and go along the row, striking the three pegs into the soil, and thus making holes along the row, 15 inches apart. This is my rule, but if you prefer 12 inches, I have no objection.

As soon as you can see a plant, strike the hoe boldly on each side. You are sure that there are no plants for a foot on each side. In drilling, I usually put on 8 lbs. of seed per acre. In dibbling, 2 to 3 lbs. is enough. The America-grown seed is much larger than the imported, and more pounds, or rather, more quarts are required per acre.

In drilling, this should be borne in mind. Better put on too much seed, than too little. There are two or three kernels in each seed. By cutting them with a sharp knife, you can see if the seed is good.

If the plants come up well, and the land is rich, you are almost certain of a good crop, provided you thin out to one plant in a place, and keep the land clear with the hoe and cultivator.

One word more. If you raise mangels at all, put in a good many. It does not pay to put in a few rods. You want enough to feed liberally. From the first of March to the middle or end of May I give my sheep and cows and pigs nearly all they will eat, but give them a plenty of other food as well.

Improvement in Harvesting Machinery.

The most surprising thing we have recently seen in the way of agricultural machinery, was a mower shown at the Centennial Exhibition last year, working admirably without any visible gearing. Indeed, one might very well say that the machine was without gearing; for on close examination a single pair of cog-wheels only was found, snugly hidden and encased in a tight box. This machine was favorably referred to in our reports of the Exhibition made at the time, and a personal trial of it since then in the field, only confirmed our high opinion of it. The machine, of which a general view is given in the illustration on the next page, known as Whitely's Champion Haymaker, is peculiar in having adopted a most important and yet simple novelty in mechanics, by which the following useful effects are produced. The draft is remarkably light, because the absence of the usual gearing reduces the friction to a minimum. The work is so free from noise and clatter, that the machine, at work twenty feet away, is scarcely heard by an observer. Strength and durability are secured in

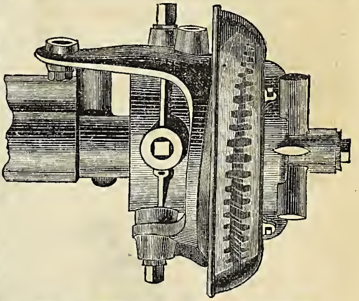


Fig. 1.—MECHANISM OF WHITELY'S MOWER.

USES OF THE FOUNTAIN PUMP.—(*See page* 178.)

the highest degree, by the peculiar movement to be presently explained. It is claimed for this mower that the knife will work in any position, and may be adjusted while in operation to cut low or high; to take up lodged hay or grain; to pass over stumps, stones, or other obstructions, by raising either or both ends from one inch to a foot; or the bar may be lifted up as in fig. 2, to pass a tree, or for any other purpose. There is no pitman to become entangled with grass, or to jar or to waste power in noisy operation. We find that the peculiar movement referred to, and which may be used for other mowers and machines, works in a most satisfactory manner. The important novelty in this machine, and its chief value, consist in its motive parts. These are two small cog-wheels, or disks only, which are shown in figure 1. These are placed together, so that there are always eleven cogs in contact, giving extreme strength, and making the breaking of a cog impossible. Only one of these wheels rotates, the other, from its being hung on what is known as a gimbal point, has a peculiar wobbling movement, or vibration, which gives direct action to the knife. Thus the whole force of the horses is used to work the knife, instead of being used in wearing a number of cogs, and making a wasteful and annoying clattering. There are no gears on the wheels, and the two disks mentioned are completely enclosed. We have not space sufficient to describe more fully the interesting details of the machine, and only to say that the smallest of these are constructed on the same bases of strength, simplicity, and effectiveness, as the principal parts. One point should not be omitted, which is that one geared disk has 40 cogs, and the other 48, so that a great many revolutions occur before the same cogs come into contact with each other the second time. This has the effect of preventing such wear as would cause unevenness in working, even after many years. This machine has received many first premiums at agricultural fairs, and a medal and diploma at the Centennial. A more full description of this peculiar movement will be found in an illustrated pamphlet issued by the proprietors. This improvement is the property of Mr. Wm. N. Whitely, one of the manufacturers of the Champion Reapers and Mowers of the city of Springfield, Ohio.

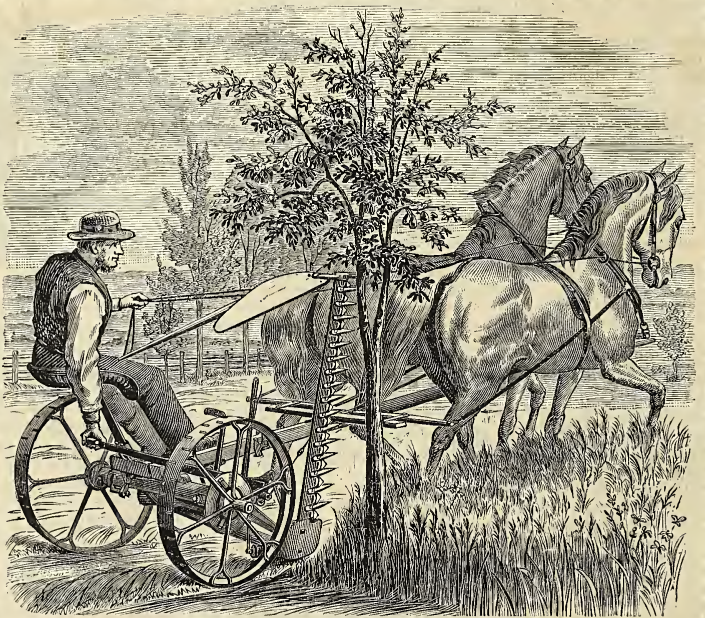
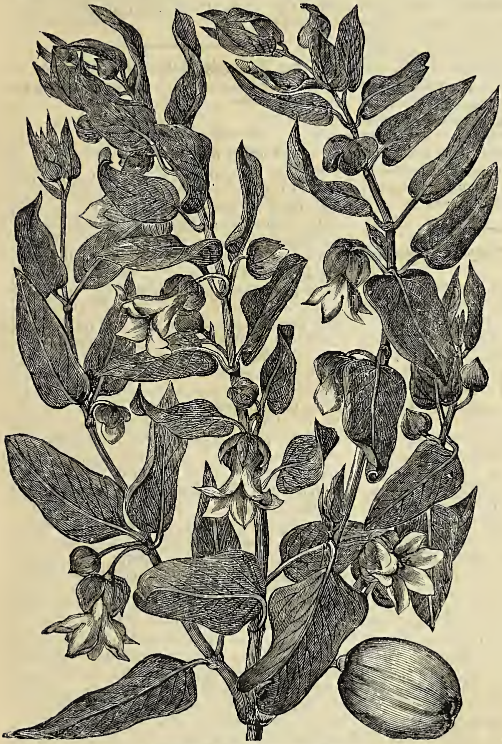
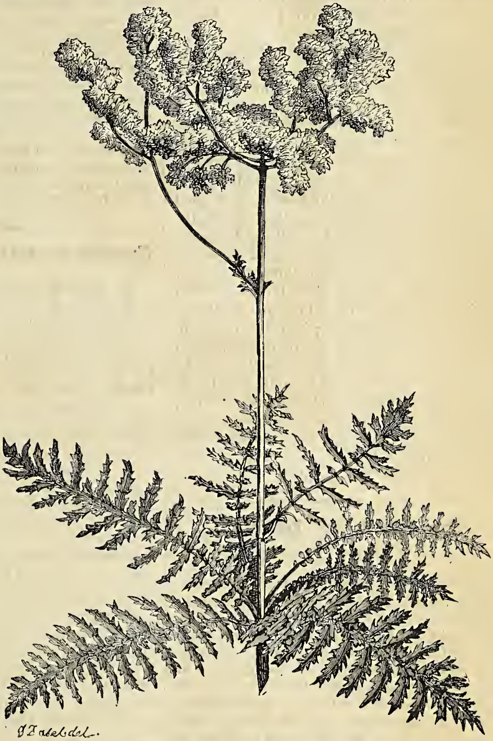


Fig. 2.—WHITELY'S IMPROVED CHAMPION MOWER.

A Cruel Flower.—The Bladder-Flower.

Every now and then an old plant turns up as new, as is the case with the Bladder-flower, which we had not seen for twenty-five years or more, but last year one or two florists offered it, and we now see that several have it in their catalogues. Firstly, as to its name; it is in the catalogues, and some books, as *Physianthus*, from the Greek words meaning *bladder* and *flower*, and as the plant has not, so far as we can learn, an English name, and as the majority will like it all the better if it has one, we translate the generic name. But here comes the trouble that botanists no longer call it *Physianthus*, because, before it received that name, some one else had given it another, and as the oldest published name must be followed, it is properly *Arauja*, which is the name by which it is called by the savages in its South American home. It is often a great bother to fit a plant with an English name, and we can not see why *Arauja* is not good enough, but as the majority think differently, we comply with their wishes when possible. The plant is a climber from Brazil, which has leaves and flowers of the shape shown in the engraving, the leaves being of a whitish-green or light sage color, and the flowers, which are hardly sufficiently bladder-like to warrant the name referred to, are white and fragrant. The fruit is as large as an orange, or larger, is quite curious and ornamental, and said to be made, while young, into sweet meats by the South Americans; the pod being very light and spongy, breaking open and showing the seeds, each of which has a tuft of beautiful silky down, like those of our Milkweeds (*Asclepias*), to the same family with which it belongs. This relationship is further shown by the copious milk-juice which the plant gives off when cut or wounded. It has long been in use as a climber, for covering the rafters of greenhouses; it is hardy in the warmer parts of England, and no doubt would be so in Virginia and southward; in the Northern States it proves a useful tender climber, to be set out for the summer, it being of rapid growth, and will cover a large space, if given a rich spot. No doubt, the roots could be preserved in the cellar, though we have not tried it. When the plant grows in the open air, the flowers will be found with numerous insects—butterflies and moths—fastened to them, often a half dozen or more to a single flower. Each insect will be found securely fastened by its proboscis or trunk, in such a manner, that by all its exertions it can not free itself. The poor things beat themselves against the flower, dusting it with the scales from their wings, and against one another, until from starvation or exhaustion they die a miserable death. We have given accounts of plants which catch insects, and feed upon them, and can see that this seeming cruelty is to a useful end—at least to the plant. Then there are other plants, which make use of insects to fertilize them, as Dr. Gray has clearly and abundantly shown. In this operation both plant and insect are benefited, though sometimes in doing this an insect fares badly; as the honey-bee, which, in fertilizing the Milkweed, gets its legs so loaded with the mass of pollen, that if it gets to the hive, it is unable to climb up the comb, and dies; yet even here the intention is good, though the bee overdoes his part of the work. But in our *Arauja* we can find no such excuse. The flower is not fertilized by these insects, nor does the plant consume them. The contrivance for catching the moths and butterflies is as effective as if it had been designed for the special purpose, and to all appearance the plant is guilty of an act of unmitigated cruelty—catching and killing—no not even that—starving to death, inoffensive insects, just for the fun of it. Certainly appearances are very much against the plant, and *Arauja*, being a "barbarous name," is properly applied. When the plant was in flower, we made a sketch of the mechanism of its trap, but it is unfortunately mislaid. Suffice it to say that the anthers are so placed, that their spreading cells form a series of notches WW in a ring around the pistil. The insect, in putting its proboscis down for the honey, must pass it into one of these notches, and in attempting to withdraw it, the end is sure to be caught in a notch—boot-jack fashion, as it were—and the more the insect pulls, the tighter its trunk is drawn towards the point of the notch. Whether the insect is unable to back down its flexible trunk, the only way it can get release, or does not think to do it, we can not say, but the fact that it doesn't is very evident. As it is contrary to the natural order of things, for an insect or a plant to do an act, without subserving some good end, we do not think this to be an exception. An examination of the flower shows it to be so constructed that it must be fertilized by some insect, evidently by one with a proboscis of a different kind from that of our moths and butterflies. No doubt in its native home the particular insect is abundant, and all goes on well. Human intervention disarranges the whole affair, and we set out the plant where our insects, unused to this style of flower, are attracted by its abundant honey, and are led to a miserable death, while the plant acquires a reputation for a cruelty, which it can not avoid. An English writer, a few years ago, wrote of the flower as "diabolical," for trapping insects just "for the fun of covering itself with borrowed plumage." There is one compensation for this evil; a French writer has suggested that the plant may be turned to excellent account by the entomologist, by making it do the "bug-catching;" this is a capital idea, which we commend to our entomological friends, for to judge by the way our plant (sent by Peter Henderson) behaved last summer, we are sure that it would prove a most efficient trap for both day and night flying insects; the flowers held the largest sphinxes, or humming-bird moths, as well as those so small, that their proboscis barely reached the bottom of the flower.


A CRUEL FLOWER.—(*Arauja albens.*)


THE DROPWORT.—(*Spiræa filipendula.*)

The Dropwort.—(*Spiræa filipendula.*)

The genus *Spiræa* is one of the few which furnish to our gardens both woody and herbaceous plants; indeed, the shrubby Spiræas are so common, that many persons are surprised to learn that the Dropwort, and some of its relatives, belong with them. The Dropwort is a native of Europe, where in its single form it is a common plant, and though that is sometimes cultivated, it is far inferior to the double-flowered variety, the one of which we give an engraving, and which we consider one of the most useful of our border plants. The leaves form a dense rosette close to the ground, and are cut and toothed into very fine divisions. The engraving in this respect does not give a correct idea of the foliage, as in order to represent more distinctly the shape of the individual leaves, only a few are shown, while in reality they are so numerous as to form a thick mat, a foot or more across. The flower-stems arise from the center of this cluster, are nearly naked, in the single plant often two feet high, and in the double about a foot, and bear at the summit an open cluster of white flowers, which are sometimes tinged on the outside with pink. The double flowers are exceedingly double, the small flowers being crowded with tiny petals, which give the mass a peculiarly light and "flocky" appearance. This plant is valuable for both its foliage and its flowers. The finely cut leaves have a fern-like appearance, and their delicate outline, joined to their rich green color, would make it worth growing as a "foliage plant." In Europe it is set out for edgings, a use to which its low stature, and compact, regular habit well adapt it. When planted for this purpose, the flower-stems are pinched out as they appear, to secure a greater vigor of foliage and uniformity of outline. The pure white of the flowers, and their tufted manner of growing, adapts them especially to bouquets and to florists' work, while they add brightness and life to the border. Not the least of their good qualities is the length of time they remain, the individual clusters lasting well, while by the production of successive stems, the flowering is continued from early summer until frost. The engraving does not show the root, which consists of coarse fibres, which are swollen at intervals into small tubers; it gets its common, and also its specific name, from these, which have some resemblance to "drops," or beads, upon a thread. The plant is multiplied by divisions of the clump, made early in autumn, which requires to be done with some care, in order to insure a bud with each portion of the root; the tubers themselves will very rarely grow if separated from the plant.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE XII.—HOW CROSS-FERTILIZATION BENEFITS.

We remember a homely saying which declares that "there is as much difference in people as there is in anybody." The same is true of plants, and it comes out strongly in this matter of fertilization. Some plants show the benefit of crossing mainly in vigor of growth and greater hardiness, others in increased fertility, and some do not show it at all, so far as the experiments go. The Morning Glory —the subject of our last article—is a good case of the first kind; our garden *Eschscholtzia* is one of the second; and Tobacco appears to be a case of the third, but the experiments were not carried very far. Vegetable nature, like human nature, is full of complexities and apparent contradictions. To superficial observers and theory-makers, who run off in haste upon one line of facts, all appears to be simple enough; but the simplicity is generally subjective. Some very good observers soon get entangled and flounder helplessly among conflicting or discordant facts, and conclude that the whole thing is "something no fellow can find out." But any one who reads this book of Mr. Darwin's, on the effects of close and cross-fertilization, will see that he is a wary and patient investigator, who is neither carried away by his own theories, nor hopelessly arrested by unexpected complications. Out of his thousand and more crosses, and equally large number of close-fertilizations for comparison, certain results come out pretty clearly.

First, That crosses between different flowers of the same plant are not sensibly beneficial.

Second, That crosses between different individuals of the same stock, (say from seeds of the same plant), are more or less beneficial; but that the benefit does not go on accumulating in successive generations, or may disappear in the course of three or four generations.

Third, That crosses between plants which have been raised at a distance from each other, and therefore under different circumstances, almost always result in a marked increase of vigor or fertility.

Fourth, That this is also true of the crossing of two slightly different varieties of the same species.

And the important conclusion is, that it is not the mere cross-fertilization that benefits, i. e., that the advantage does not follow from any mysterious virtue in the mere union of two distinct individuals, as such, but that it comes from the individuals and their progenitors having lived under somewhat different conditions and influences, so as to acquire certain differences in constitution. It is from the combination of differences that the new strength proceeds. This explains a curious but well known fact about hybrids: namely, that where two species of plants are so much alike that they hydridize freely, the hybrids are apt to make much stouter and larger plants than either parent. This is well seen in the two common species of Stramonium. So this seeming anomaly is only an extreme case of the advantage derivable from the union of differences. I need not say that all this coincides with the conclusions of cattle-breeders, who find it advantageous not only to cross breeds upon occasion, but also cross at times with individuals of the same breed, from widely separated flocks or herds.

Changing the Bearing Year of Orchards.

[To judge by the extent to which it has been copied, and the correspondence it has called out, our article in March last, with the title given above, was timely, and the responses indicate that people are beginning to give to their orchards that which has been their greatest lack—thought. The following is from a most careful observer.—Ed.]

Bearing every other year in orchards is a habit so well established, that many very honestly doubt if it can be corrected. Of course, nothing but facts can help us to an intelligent decision of this question. A. J. Downing wrote many years ago in his work on Fruit Trees: "The bearing year of the apple, in common culture, only takes place every other year, owing to the excessive crops which it usually produces, by which they exhaust most of the organizable matter laid up by the tree, which then requires another year to recover, and collect a sufficient supply to form fruit-buds. When half the fruit is thinned out in a young state, leaving only a moderate crop, the apple, like other fruit trees, will bear, as it will also, if the soil is kept in high condition. The bearing year of an apple tree, or of a whole orchard, may be changed by picking off the fruit, when the trees first show good crops, allowing it to remain only in the alternate seasons, which we wish to make the bearing year."

To sustain his opinion that orchards may be made fruitful every year, he cites a letter from R. L. Pell, of Pelham Farm, on the Hudson, who changed the habit of his orchard of 2,000 Newtown Pippin trees, making it abundantly productive every year. This was done by pruning, manuring, and keeping the soil under cultivation. Some twenty years ago we visited the homestead of David Lyman, at Middlefield, Ct., in the odd year, and found the ground in his orchard well covered with apples. He informed us that he plowed the ground frequently, manured liberally, and raised paying crops of apples with as much regularity, as other crops upon the farm. Some twenty-five years ago we grafted the Cogswell Pearmain into an apple tree in a neighbor's garden. It came into bearing in a few years, and has given regular crops annually, with hardly a break since. The ground has had high garden cultivation, and the tree has had all the food it could use. In the orchard, this apple is a persistent bearer in alternate years. We came into possession of our present premises eight years ago, on which were thirty pear trees, about half of them in bearing condition. There are a dozen or more varieties of pears, and all the trees of sufficient maturity give regular crops, with the single exception of a Vicar of Winkfield, which is now well furnished with fruit-buds in the barren year, and promises to give up its bad habit. A. Young, one of the best fruit-growers in the Mystic Valley, started his apple and pear orchard twenty-five years ago. Among his apples are the Cogswell Pearmain, Baldwin, Roxbury Russet, and other varieties, maturing in the summer and fall. He takes good care of his trees, manures and cultivates, and has crops every year. The only difference is that between good crops and extra good crops. Isaac Denison is another good fruit-grower in the same district. He began his planting eighteen years ago, and has a very thrifty and productive orchard. Both apples and pears bear every year with him. All the facts with which we are acquainted lead to the conclusion, that high cultivation, persistently followed, will remedy the barrenness of fruit trees in the alternate years. Feed your trees regularly, and they will feed you. CONNECTICUT.

Some Valuable Native Forest Trees.

BY PROF. C. S. SARGENT, DIRECTOR OF THE ARNOLD ARBORETUM, OF HARVARD UNIVERSITY.

(Concluded from last month.)

Red or Norway Pine, (*Pinus resinosa.*)

This fine tree grows through the northern portions of the United States, from the Atlantic to beyond the Great Lakes, appearing at rare intervals as far south as the mountains of Pennsylvania, and extending northward to the shores of Hudson's Bay. Never forming extensive forests, and only appearing in isolated clumps of a few hundred trees, either growing singly, or mixed with the more common conifers of the north, the Red Pine is but little known as a timber tree in our markets, and its valuable qualities are hardly understood. Considerable quantities of Red Pine lumber reaches Great Britain every year from Canada, and there is an active trade in it, in the form of "shooks," between the sea-ports of the State of Maine and the West Indies; indeed for "shooks," (the technical name for boards shipped to the West Indies for making sugar boxes), it is preferred to all our northern woods. I have been unable to learn, however, that Red Pine lumber is known among dealers in our large Eastern Markets, and it is doubtful if it now ever reaches them. Laslett, a recent English writer on timber, speaking of Red Pine, as it appears in the English Markets, says: "The wood is white, tinged with yellow, or straw color; it is tough, elastic, moderately strong, and possesses a clean, fine grain, which works up well, bearing upon the surface a smooth, silky lustre. It is not apt to shrink, split, or warp much in seasoning, and technically speaking, it stands well, which renders it a choice and very valuable wood for all kinds of construction, while in the domestic arts there need not be any limit to its application. The Red Pine is very solid about the pith, or centre of the log, and has but little albumen or sap wood. There is, therefore, only a small amount of loss in its conversion, even if reduced to planks and boards; while it can further be worked with great advantage in ship-building, for dock purposes, for cabin, and for other fitments."

As compared with White Pine, Red Pine is heavier, much stronger and stiffer, and from the greater amount of resinous matter which it contains, more durable, although less easily worked, and less suited for interior finish, or fancy work. The great hardiness, and rapidity of growth of the Red Pine, render this tree especially suitable for forest culture on poor soils, in the extreme northern portions of the United States, and in Northern Europe, where it alone of the North American pines promises to be of economic value as a forest crop.

As an ornamental tree, the Red Pine takes a high rank. In its young state it is the most elegant of the two-leaved Pines, and this elegance it owes to its graceful habit, and long, dark green foliage. It is certainly a more beautiful tree, than its nearest botanical allies, the Austrian and Corsican Pines, which it generally resembles; nor have I noticed, as yet, any liability in it to the attacks of a borer which threatens the extermination of the Austrian Pine in this part of the country, at least. For windbreaks, and shelter plantations, in the Northern States, the Red Pine will be as hardy and valuable as the Scotch Pine of Northern Europe; and the beauty of such plantations will be considerably increased by mixing together these two species, and thus contrasting the dark green foliage of the American tree with the peculiar light, blue-green foliage of its Old World relative.

The Yellow and the Red Pines are rarely met with in cultivation. A few of the largest collections of conifers in the United States and Europe possess, here and there, a single specimen, but young plants, strange as it may appear, cannot at this time be procured with any certainty in any American or European nursery. For this reason I have dwelt somewhat at length on the merits of these trees, in the hope that some of our nurserymen will take them up, and make them common and cheap enough for forest and ornamental planting.

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Blue Glass in Horticulture.

In 1871, Gen. A. J. Pleasanton, of Philadelphia, published an account of his experiments with blue-glass, claiming that vines in a grapery partially glazed with glass of this color, were vastly more vigorous in growth and productive of fruit, than those under colorless glass. He also claimed that pigs, under violet glass, made a much more rapid growth that those in an ordinary pen, while a sickly bull-calf, placed in a blue-glass pen, not only recovered at once, but in 50 days developed in a manner described by its owner as "marvelous." These revelations do not appear to have created any general interest at the time, but last year (1876) a new edition of the work appeared, giving accounts of numerous alleged cures of disease in human patients, and other wonderful results on both plant and animal life, effected by blue light. Soon after this publication there was an excitement concerning blue glass; and so many were disposed to make a trial of it, that the stock became rapidly taken up, while the price of the article was duly advanced. The newspapers helped the excitement by frequent articles, either taking a serious view of the matter, or turning it into ridicule. We received Gen. Pleasanton's work several months ago, though we can not say that we have read it, as it is well nigh impossible for any one having a knowledge of the elementary laws of physics, to wade through it. The remarkable views presented as to light, electricity, magnetism, and matter in general, and the ease with which the most abstruce questions are disposed of by assertion, make the work a curiosity. The medical relations of blue light, we regarded as one of those singular delusions that periodically possess the public mind in relation to curative means, which would have its run, and if it did not lead to the neglect of proper treatment, might prove harmless. The influence of blue glass upon plant growth, being more in our line, we examined the claims made for it, and finding these in such direct opposition to the facts established by men of science, we did not think it worth while to present the matter to our readers. Recently, however, letters of inquiry have come, and as we learned that several persons were taking out the plain lights from their green-houses, and replacing them by blue ones, we found it necessary to say something on the subject. As we were about to write on blue glass, there came most opportunely to hand an article from Peter Henderson, Esq., which being, as his articles usually are, the result of experience, will carry more weight with our readers than a presentation of the matter in any other form.

What Peter Henderson knows about the Effect of Blue Light on Plants.

Five years ago, (though utterly skeptical as to its value,) I, at the urgent solicitation of a friend, used a *blue* transparent wash on the glass of one of my greenhouses, thus changing the glass practically into blue; on the glass of another house, of similar size, I used whitewash. Both greenhouses were filled with plants of a similar character. In a few weeks we found that the plants in the house under the blue glass were "drawing," or spindling up, more than under the white, and on examination of a thermometer, placed in each house, it was found that, during the first two weeks in June, the average temperature, under the blue glass, was 90°, while under the white it was 80°. This was just such a result as might have been expected, the darkened glass *absorbed* the sun's rays, and the heated glass gave off its heat to the interior of the house, while the whitened glass *reflected* them, that was all. The temperature was simply increased under the blue glass, and to the great detriment of the plants, for all cultivators know that in our hot summer months, the difficulty we have to contend against is too high a temperature. If Gen. Pleasanton started to force his grapery in midwinter, his blue glass would be apparently beneficial—not because it was *blue*, but because it would assist him in getting a higher temperature, which would, *at that season*, be desirable; or, for the same reason, his pigs might feel somewhat more comfortable and fatten more quickly. But were he to carry on the culture of either under the blue glass into midsummer, both pigs and grapes would be likely to remonstrate. Upwards of 30 years ago, it was claimed that seeds would germinate, and cuttings root, quicker under dark-colored than under light-colored glass; this is no doubt true, and from the same cause—an increased temperature under the dark glass, but all who have had experience in such matters, well know that this "forcing" process is at the health of the subjects so treated, unless indeed they are plants indigenous to tropical countries, to which a high temperature is natural. To claim that blue glass, or any other colored glass, has any properties capable of affecting health, in other manner than what is due to an increased temperature, produced by any other means is undoubtedly false.

Mr. Henderson no doubt assigns the proper reasons for whatever seemingly favorable influence blue glass may have upon the plants growing beneath it. That there is any peculiar power in the blue ray to accelerate plant growth, which our readers are well aware depends primarily upon the decomposition of carbonic acid, liberating the oxygen and the assimilation of the carbon, is disproved by the results obtained by various careful experimenters. Indeed, the rays of the blue end of the spectrum are much less favorable to the decomposition of carbonic acid by plants, than yellow rays, and either alone greatly inferior to all the rays together—or white light. The experiments of Pfeffer (Sachs's *Lehrbuch der Botanik*, 1875), show that the amount of decomposition under white light being 100, the red-orange rays had a decomposing power equal to 32.1; the yellow, 46.1; green, 15.0, while the blue and violet rays are only 7.6. We were quite amused with the strong common sense view of a friend, who, in speaking of the subject, remarked: "if blue light were best for plant growth, the Creator would have provided it in the beginning." Should any of our readers desire to give their plants blue light instead of white, we would warn them that its application is patented! Blue rays are an essential part of white light, and some court may yet decide that the use of the greater involves the less, and we are all infringing upon the patent. At last accounts white light is not yet covered by a patent, but one can not tell what may happen.

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CAULIFLOWERS.—In our climate early cauliflowers oftener fail than succeed. Allowing the seed to be of a good strain, many skillful cultivators find themselves unable to produce anything like a fair return for their labor from early varieties, while they have excellent results with the late crop. This is because our climate is very unfavorable to the one, and well suited to the other. At the time late cauliflowers are perfecting, the heat of the sun is daily becoming less, there are frequent fogs, and the nights are cool with heavy dews. All these conditions, which so suit this plant, are exactly reversed when the spring crop is coming on; then the temperature of both day and night is increasing, and just before the plants have reached their full size, and are ready to head, the weather is so hot that growth is checked altogether, and the plants come to a stand-still. In order to succeed, the early plants should have their growth pushed as rapidly as possible; abundant manure, of course, they need, and they should be protected on chilly nights. If hand-lights can not be afforded, then some screen or shelter, to be put over at night, to prevent any check by chilling, should be provided. Then if there can be some easy methods of watering abundantly when dry weather comes on, all will have been done that our climate and conditions will allow, and fair success may be looked for.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

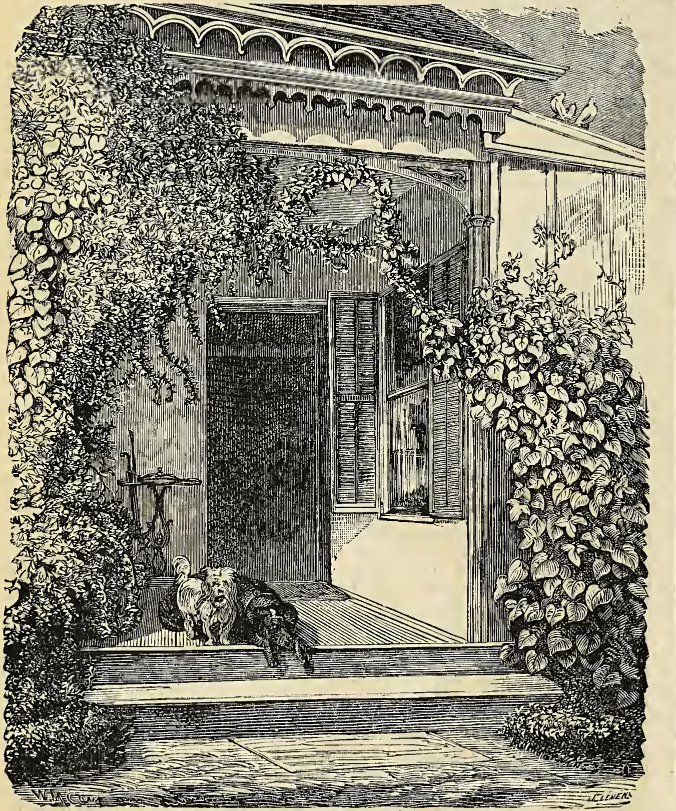
Floor Cleaning.

"The melancholy days have come,"—not those Bryant sings so sweetly about, but sad days for the housekeeper. When this screed of mine appears in the clean print of the *American Agriculturist*, it will be settled weather, and clean carpets will have been tacked down in the sitting-room, and grassy and hard-beaten paths will yield little mud for the housekeeper to sweep out or scrub away. But while I write, the thaws of March are upon us. To scrub or not to scrub, that is the question. For, three hours after the most careful cleaning, it may be that the difference between the present condition of your floor, and its appearance an hour before mopping, is scarcely perceptible to the naked eye.

In such a state of things I really do not think it pays the busy housekeeper to seriously "scrub" her floor. I got an idea from my mother on that point years ago. It was rainy weather, and children were running out of and into her kitchen, and mud was unavoidably brought in by different members of the family. When I saw her get her mop and pail, I exclaimed: "O! it won't pay to clean this room to-day, if it is Saturday. By to-morrow it will look as bad as it does now."—"I shan't scrub it, but only wash off the top-dust," said mother. After the work was done, I saw the utility of it, we were all able to breathe so much freer in a room, when the "top-dust" was washed away. Many a time since then have I been expostulated with for washing the floor, when it was "no sort of use—it would get muddied over again right away." Men who make such remonstrances scarcely appreciate the situation. They spend most of their time in the open air, and when they come in and sit down, they have no care of their skirts, as women have, no instinctive dread of seeing anything that must be added to the weekly washing, drop upon a dusty floor, and when the dust is stirred up and distributed through every part of the room by the broom, these kind-hearted men, who hate to see us do needless labor by frequent floor-cleaning, are usually out of the house. We soon learn by experience that dust on the floors means hard work at the wash-tub. A dusty carpet does not make work in the same way, for the dust sinks into and through the carpet, so that a clean cloth, dropped upon it, takes up little dust. But when it comes to the sweeping or dust-distributing, the unclean carpet is an unmistakable nuisance, and all day long, if there is any movement about the room, the dust in and under the carpet is stirred up, and makes the air more or less unfit to breathe.

How to Wash a Wood-Floor.

"Top-dust" can be washed off without great labor. Have the water only moderately warm, especially when the floor is of soft wood, because hot water sinks in so rapidly, and occupies so much more time in drying, than cool water upon wood. Drain the mop pretty well before putting it upon the floor, thus wetting the floor but little. The object is to wipe up the dust as thoroughly as possible, rinsing it off from the mop into the water, and changing the water for cleaner very often. If you put much water upon a very dusty floor, you have a big troublesome mud-puddle to sop up or rinse away. Experiment has convinced me that a floor of pine or basswood looks best after cleaning, if a small amount of water has been put on each portion of it. Use as much water as you please on the whole floor, the more the better, if you wash and wipe only a small portion at a time, and then throw out the dirty water, and begin the next division with clean water. The sooner a soft wood floor dries, the better it looks. I have seen women work very hard to scrub a pine or basswood floor white, and the result has been quite disappointing. They would put a great deal of water upon the floor, and then scrub with a broom hard and long; after this would sweep all of the dirty water out, and rinse the floor with as many waters as they could afford. When at last the well-soaked floor was dry, it was undoubtedly clean, but it looked dark and somewhat weather-beaten, in consequence of remaining wet so long. It is a question of health with me, in winter, to have a floor dry as soon as possible. A little lye in the water has an excellent effect upon floors. It may be poured directly upon decided greasy spots, but the whole floor is whitened with very little hard rubbing, if a small amount of lye is mixed with the water. Too much makes the boards yellow. How much should be used depends upon its strength. Never put lye into the water with which you wash a painted floor, else you gradually but speedily remove the paint with each cleaning. If you let an inexperienced hired girl have her own way with a painted floor, she will probably use her boiling suds upon it, and soon remove nearly all of the best paint. Clean warm water is best for painted floors. If you have a nice hard-wood floor, be thankful, especially if it be of white ash, but never let its spotlessness become dearer to your heart than the family peace. You learn by experiment how much nicer one of these hard floors look, when washed with clean suds, than when washed with the boiling suds of Monday.



A DOOR SURROUNDED BY VINES.—(*See next page.*)

Let those who like get down upon their knees, and scrub their floors with brushes and floor-cloths—such work is not for me nor mine, and I consider it pitiful business for any one. I hear of long-handled scrubbing-brushes, and doubtless these are suitable for human beings in the work of floor cleaning. What I most want is a cheap and easy mop-wringer, for I dislike extremely to put my hands into the mopping water. Of such a wringer I have heard, but have had no experience of its merits.

Bathing: How often, and When.

Habit has something to do with our supposed necessities in regard to bathing. Some respectable persons never bathe the whole body except in warm weather. Others cannot be comfortable, cannot feel clean, without a daily bath. Those who have a daily bath usually take it on rising from bed in the morning. For this purpose, some use water of any temperature which the season may make most convenient, even taking icy water in winter, and bathing in a cold room. Some who have followed this practice for years, have become convinced that it has wrought much mischief, and that only great robustness of constitution ever enabled them to endure the tax upon their native vigor so long. Most physicians do not advise so frequent bathing, considering a weekly or semi-weekly bath sufficiently frequent for cleanliness. Something depends upon the season or climate, and much depends upon the manner of bathing and the previous condition of the bather. It is an established rule that no general bath should follow very closely upon a meal. The stomach should be allowed to monopolize the first consideration for at least an hour after filling it, during which time no great demand must be made upon brain, muscles, or skin. The stomach, when full, demands more than its usual portion of blood, so that the surface of the body is sometimes made chilly on account of a heavy or difficult meal. When cool water, or much friction, is applied to the skin, an immediate demand for blood is made at the surface of the body, and of course stomach and skin cannot both successfully make these demands at the same time. Sudden death has been known to result from a full bath immediately after eating. I can't help thinking that many little children have suffered from the carelessness or ignorance of their mothers, or nurses, in regard to this rule. I have known more than one mother to bathe and dress her little child immediately after its dinner, just because this time was most convenient. This rule, however, does not apply strictly to infants while fed wholly on milk. The stomach of a little babe holds but a very small quantity, and this being wholly fluid, does not require a very long period for its digestion. It does not seem necessary to wait more than half an hour after nursing a baby, before giving it its mild little bath, which, of course, is never given in a cold room. If you wait too long, baby sometimes gets very hungry and complains loudly before the dressing is all completed. Physicians sometimes recommend that baths be taken when the body is at its greatest point of vigor, or near noon, but however this may apply to sick persons in respect to their curative baths, it cannot well be obeyed by busy people in their weekly or semi-weekly baths for cleanliness. A housekeeper will usually take her bath on rising in the morning, or when she changes her clothes after the dinner work is done, or when she goes to bed. One should not bathe when much fatigued, but if not especially weary, a bath just before bed is a good thing—not a "tonic" or cold bath, but a good washing with comfortable water, rapidly given if the room is cool; but if possible the room should be warm.

Graham Bread.

This is an easy and a good way to provide loaves of graham bread. When making common white bread, set enough sponge at night to spare a little for a graham loaf next morning. For one common tin-loaf take a little more than a pint of the sponge, add a table-spoonful of sugar, and stir it thick with graham flour. Stir well with a spoon, but do not knead it or it may be too hard and dry. Turn it into the buttered pan, let it rise in a warm place, and bake it slowly for an hour or longer.

Of course several loaves may be made in this way, setting a fine flour sponge at night, and stirring graham flour into the whole. Most people will prefer this to loaves of undiluted graham bread. Unless you put in sugar or molasses, your graham bread made with yeast is not half so sweet as graham gems, especially if these are mixed with sweet milk, either new or skimmed. Many prefer to steam graham loaves for an hour, and finish by baking about 20 minutes—to prevent a hard crust.

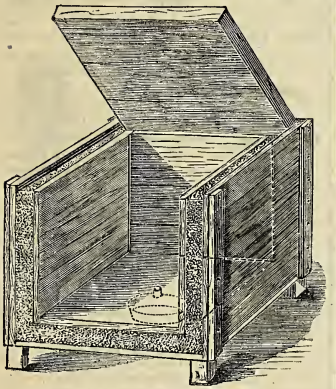
Sour Milk and Soda.

I presume I can say nothing under this head that has not been said before in these columns. But I perceive that there are experienced housekeepers who have yet to learn how to use soda with sour milk. A woman of double my experience told me, not long ago, that she had now got so that she could make sour milk buscuit that her folks would eat. Now she mashed the soda and mixed it with the flour, then stirred in the sour milk or buttermilk. Before this she "put the soda in a cup," but the buscuits were always streaked and spotted. This would not happen, I am sure, if the right quantity of soda was taken, and if the soda was carefully dissolved in water, either warm or cold, stirred quickly and thoroughly into the sour milk, and rapidly beaten up with the flour.

In giving directions to another, I think I should advise a thorough incorporation of the soda with the flour, after both soda and sour milk have been exactly measured. For then the effervescense (or foaming) would all take place in the dough, the gas would raise the flour, and the mass would surely be light. A careless cook will perhaps mix her sour milk and soda together, and while it is foaming and settling again to quiet, she is perhaps getting her flour and hunting up her rolling pin, and of course she doesn't "have good luck" with her biscuit. If she would get everything ready, even the buttered tins, and then measure out a level teaspoonful of soda for each teacupful of sour milk, or a rounding teaspoonful for each pint, then dissolve entirely the soda in a cup by itself, and stirring it quickly into her sour milk or butter-milk, (sour of course), pour the whole into the flour before the foaming fairly begins, and work it together quickly—there would be no streaks and no heaviness. But the best thing to do with baking soda, is to avoid its use as far as possible, for accurate measurement is impossible so long as there are varying degrees of sourness in milk, and different sized spoons and cups: and good things, and plenty of them, can be made without any soda.

A Home-Made Refrigerator.

In some cases it is not convenient to procure any of the very excellent refrigerators now made for sale. Then a home-made one may serve a useful purpose. The materials for this, as shown in the annexed illustration, are simply two packing boxes, one of which is smaller than the other, a quantity of powdered charcoal, and a few square feet of hair-felt, such as is used for covering boilers as a non-conductor of heat, or of common oil-cloth. The engraving shows the boxes with the front parts taken away, so that the manner of putting them together may be seen. A few inches (not less than four) in depth of the powdered charcoal is laid on the bottom of the outer box, which should be lined with the felt. Then the inner box, covered on the outside with felt, is placed in the outer box. The space around it is packed tightly with the charcoal up to the top. A strip of tin is nailed so as to cover the charcoal between the boxes. The inner box should be lined with sheet zinc or galvanized iron. A hole is bored through the bottom, and a short piece of lead-pipe is fixed to carry off the water from the melted ice. The covers of the boxes are fitted so as to have an air space between them, and felt is tacked on to these to help keep out the heat. Common oil-cloth will answer in place of the felt, if that can not be procured. When in use, the ice is placed upon a small wooden rack upon short legs, which raise it an inch or more above the bottom of the box. The ice may be wrapped in a piece of blanket, which will make it last much longer than without it. If needed some rack shelves may be fitted around the box, upon which to place whatever is to be kept cool. The box is set upon four short legs, or blocks, and a pan is kept beneath it to receive the waste water.



SECTION OF HOME-MADE ICE-BOX.

Vines at the Door.

If the house-mother (to borrow a most convenient word from the Germans) looks after no other portion of the gardening, she is quite sure to take an interest in the vines, which cluster so closely around the door and windows, that they seem a part of the house rather than of the garden. Here is a common ground on which all can meet—the decoration of the house, for there is no work of the architect, however costly, but seems to need the final finish of vines, and no house, however poor in its exterior, but may be made to look home-like by the use of climbers. In our climate every house should have a veranda of some sort, even if but a mere porch, to shelter the door, and whether it be an extended veranda or narrow "stoop," there is a place for vines. The utility of vines, whether on the score of shade, or that of mere ornament, needs no showing, as all will admit it, and it becomes merely a question of ways and means—what to plant, and how to get it. In the first place let us say that if there is neither veranda or porch, and most log houses, and some of more pretentious have neither, one need not be without vines. A trellis of poles of some kind can be arranged to support the vines, and if it can be made of cedar and permanent, all the better, but if this can not be commanded, draw upon the stock of bean-poles, or get poles by some means that will answer for a season. Given poles, a few nails, some wire and string, and assuming the rather improbable case that she can get no help, the woman can have the door shaded if she will. As to the trellis but a few suggestions need be given. No matter if it looks rude at first, the vines will charitably cover any sins of construction. Recollect that vines are heavy and autumn winds powerful, so regard strength rather than beauty. If there are two doors and but one trellis, put it at the one where it will be the most use and comfort. Of vines we have both annual and perennial. Annuals, raised each year from seed, are the least satisfactory, but are sometimes the only ones available. The number of those which grow sufficiently tall is small. One of the best is a native, the Wild Balsam-Apple, or Wild Cucumber, (*Echinocystis*), which was figured in April of last year, and about which Faith Rochester wrote so enthusiastically in Nov., 1875. But unfortunately this is not to be had at the seed-stores, and unless you happen to know a friend who has some seeds, this is out of the question. Next comes the Morning-Glory, old, but good; the flowers are short-lived, but some of the finer kinds are sufficiently beautiful to offset this defect. A paper of seeds of the best can be had for 10c. The Hyacinth Bean and Scarlet Runner, do not make so dense a covering, but are better than no vines. When we come to perennial vines, the list is larger. Among those that may usually be had without any expense, the common Hop is one of the most available. It grows wild in many places, and is to be found in cultivation all over the country. The common Virgin's Bower, (*Clematis Virginiana*), the Large or Hedge Bindweed, (*Calystegia*), often called Wild Morning-Glory, the climbing Bittersweet, or Wax-Work, (*Celastrus*), and Virginia Creeper, (*Ampelopsis*), are common, while one or more Honeysuckles are not rare. Either of these wild plants, to be had by only the trouble of searching for and taking up, will make a dense shade, and when the plants are well established, an abundant one. The nearest nursery will supply at 25 to 50 cents each, according to size, various fragrant Honeysuckles, Trumpet Creeper, Climbing Roses, and others. For a little more outlay the fragrant Akebia, the showy large-flowered varieties of Clematis, the Dutchman's Pipe, and others may be had. We have not mentioned the grape-vine, some varieties of which, such as the Clinton, make a capital shade, but the temptation of the green fruit to children, make other plants more desirable. Neither in the cost of vines, nor that of a support for them to grow upon, need there be any good reason why any one who really wishes it, should not add the comfort and beauty of a vine to their dwelling. While those who can afford a moderate outlay, will find that there is an adundance of pleasing climbers which, in the ornamental character of their foliage, and fragrance and beauty of flowers, will give ample returns for the investment. We have often thought, when passing a new house, it is a pity that the cost of some of the scroll and other "ginger-bread work" on the verandas, could not have been invested in vines. It is well to bear in mind that galvanized wire—about No. 14—will prove a most useful aid in carrying vines wherever they are wanted. It is desirable that vines should not run directly upon the wooden pillars of a veranda, wires may be stretched vertically about two inches from them, to which the shoots may be trained as they grow. The engraving opposite (page 184) represents the doorway of the summer residence of a friend, who prefers giving the vines some liberty to close training.

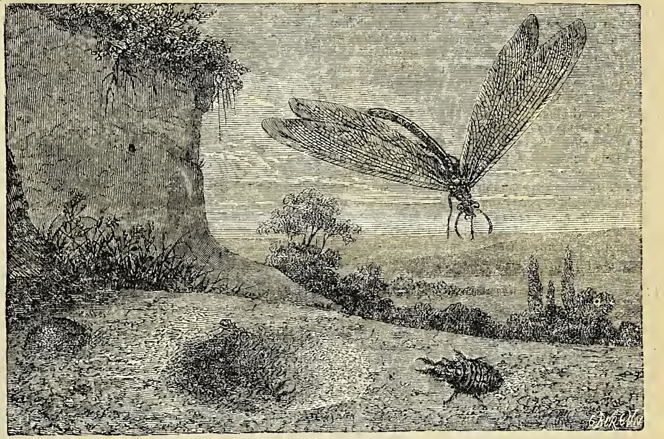


Fig. 1.—ANT-LION—THE WINGED INSECT IN THE AIR—THE TRAP, AND THE LARVA ON THE GROUND.

BOYS & GIRLS' COLUMNS.

The Doctor's Correspondence.

What is the matter with the eyes of some of you? We put Aunt Sue's address at the end of the puzzle box for a long time, but finding that some did not see it, we put a row of ☟☟☟ over it, to point it out more plainly. In spite of ☟☟☟ this, some will not see it. I have before me a postal card, asking for the address of both Aunt Sue and the Doctor—now I do not so much wonder that this boy didn't see it, as he forgot to sign his own name, but others ask the same thing. As grown people overlook things also, we perhaps should not think it strange in our youngsters. You will find Aunt Sue's address at the end of the Puzzle Box. The Doctor's is at the office of the *American Agriculturist*. Another thing youngsters should understand, Aunt Sue and myself live some 15 miles apart, we do not see one another oftener than once or twice a year, and if you, as some do, write to one to "tell the other" so and so, we can not do it without writing a letter, which you may as well do yourselves.... Master "T. M. C." wrote to Aunt Sue that I had not told all about the

BALTIMORE ORIOLE,

as I said nothing about the eggs, which he says are "four or five, flesh-colored, with a blueish tint, and marked with obscure lines of lavender, over which are irregular scratches and lines of brown and black, as if done with a pen"....Here comes Master "Harry T. W.," who wishes me to tell him

ALL ABOUT ANT-LIONS,

and where he can find them. I have seen Ant-lions, Master Harry, but I really know very little about them. When I was a youngster, I lived not very far from the sea; we children were sometimes taken to the beach for a holiday, and I can recollect seeing the pits of the Ant-lions in the fine dry sand on the beach, so far back, that the tide would not reach them. I was too young to *study* them, and, as I do not find that the books on American insects have much to say about Ant-lions, give you on page 185 an engraving from a French work, which will show you what to look for. Ant-lions are plenty in Southern Europe and other warm countries, including our Southern States; though ours are not precisely the same as the others, they have similar habits. Some of ours are found, though not frequently, as far north as Massachusetts. To understand about the Ant-lion, you must know that it passes a part of its life as a larva or grub, and then changes to the perfect or winged insect, just as a butterfly makes its growth as a caterpillar, (the larva,) and then becomes a beautiful winged insect. The perfect Ant-lions have four long and delicate wings, and in their general appearance (as shown in the picture) are much like the Dragon-flies, also called Mosquito-hawks and "Darning-needles"—which, I suppose, you know very well. Its larva is not much like a caterpillar, but is an oval, bug-looking fellow, about half an inch long, and of a grayish, sandy color. One of these is shown on the ground in the engraving; the most striking thing about it is its pair of long and powerful jaws, or pincers, with which it can hold other insects, while it feeds upon their juices—provided it can catch them. But the Ant-lion is very slow on its small weak legs, and would have but little chance to use its nippers if it had to chase its food. What it lacks in speed, it makes up in strength and cunning. It selects a place in the loose sand, and soon wriggles out a pit, a funnel-like hollow, and hides itself at the bottom; being covered with sand, all but its head—it waits. When another insect comes along, which is very likely to be an ant, as they are very curious, and reaching the edge of the pit, looks in to see what is there, the loose sand gives way under its weight, and down the poor thing goes to the bottom, and into the jaws of the Ant-lion, which sucks it dry, throws its skin, by a jerk, far beyond the pit, and sets itself as a part of the trap again. When the insect is large, and likely to get away, the Ant-lion does not tackle it at first, but throws such a shower of sand that its prey is disabled. The Ant-lion lives in this way for two years, and when it has made its growth, it spins a cocoon and goes to rest, as a chrysalis, for a few weeks, and then comes out as the winged insect, which will lay eggs to produce more Ant-lions. You must not think that the Ant-lion has it all its own way; sometimes a big insect-eating beetle calls in, when it is not the Ant-lion that makes the meal—but the other. I hope you may find some Ant-lions in New Jersey, and tell us about them. You will only find their traps where the sand is fine, dry, and loose; such places are found along the margins of streams and ponds, and on the sea-shore....The father of one of our boys writes me that the youngster has

A KALEIDOSCOPE,

and while he gets much amusement from it, the father thinks that he will enjoy it all the more if I will tell him all about it. It is very difficult to tell *all* about it in such terms as the young man will understand, but I can give him some idea of it. The instrument was invented early in the last century, and was called Kalcidoscope from three Greek words, meaning to *see beautiful forms.* It was not scientifically studied until early in the present century. It is made of two mirrors placed in a V shape in a tube, as shown in the diagram, figure 2. These mirrors are of glass, painted black on the back, and joined together at one edge by a strip of cloth glued to them. If the mirrors are rightly placed, any small object placed at one end, and looked at from the other end, will be multiplied several times. The mirrors are placed in the tube, which has at one end a hole to look through. They are a little shorter than the tube, and at the opposite end from the eye-hole, a circular piece of glass is placed against the ends of the mirrors, and over this a cap, usually having a piece of ground glass, a small space —½ or ¼ an inch being left between the two glasses. In this space are put bits of colored glass, glass-beads, bits of straight and twisted wire and other things; these are all loose, and move freely, so that they can change their places every time the tube is turned. Whatever is in the space between the two mirrors will be reflected 10 to 20 times. Thus a straight piece of wire will look like a many-sided figure; one bead will appear as many beads, and the most irregular things, being multiplied or repeated, will appear in regular figures of great beauty. The only nice point is fixing upon how far apart the mirrors shall be, or, the older youngsters will understand it if I say the angle they form. They must form an angle which, when multiplied, will make 360. Thus if the glasses are at an angle of 36°, the objects will be multiplied 10 times, (36×10=360). If the angle is 18°, they will be repeated 20 times, (18×20=360), and so on for other angles. How to measure the angles can not be explained here, but unless they are exact, the figures will not be regular. Did you ever try to make a

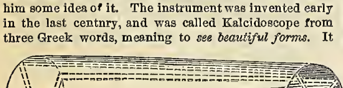


Fig. 2.—KALEIDOSCOPE.

PIANO KALEIDOSCOPE?

It is a very pretty amusement, and several can enjoy it at the same time. You use the parts of a piano-cover, which is usually highly polished, for a mirror. The part of the cover which comes down in front, answering for one mirror, and that to which it is hinged for the other. You prop the movable part of the cover with books, or in some other way, so that it will form one of the angles I have mentioned. You can hit it near enough after a trial or two. You then cover the open space with the piano-cover, or shawls, or any thing else that will shut out the light from between your two mirrors. At one end, the show end, you need a bright lamp, and then, instead of glass and beads, you will use any bright ribbons, strong-colored fabrics of any kind, such as tidies, neckties, etc., and various shining silver, or brass, or glass articles. One person holds these things close to the show end, but so that the light will fall upon them in full force, while the spectator (or several of them) looks in at the other end. The articles should be moved and turned slowly, to cause the figures to change. A little practice will teach you to manage a very pretty exhibition.

VEGETABLE IVORY.

Otto E., N. J., has read something about Vegetable Ivory; he thought that all Ivory was from elephants, and wishes to know about it. True Ivory is the tusk of the elephant, but other hard, and close-grained kinds of bone, such as whale's teeth and walrus' tusks, are called by that name and put to the same uses. Vegetable Ivory, which has come into general use within the last 25 or 30 years, is the seed of a tree closely related to the palms, which is a native of Central and South America, and is known in commerce as Ivory-nuts. These seeds are of the shape shown in the engraving, and that gives about the average size. They are packed closely in a rough, black shell or pod, as big as a man's head; this being very heavy, is borne so near the root of the plant that it lies upon the ground. Each seed has a hard, brittle, outer shell, partly broken away in the engraving. When young these seeds are soft and milky, but when ripe the "meat" is very fine grained and hard, almost as hard as ivory. It is easily told from real ivory as it is of a different kind of white; ivory is yellowish-white, while this is blueish-white and more transparent than ivory. As the seeds are small, as compared with an elephant's tusk, and have a small hollow place in the center, they can not be put to very many uses. Small knobs, parasol handles, and such wares are made from them, and they are used for making little spools, silk-winders, and similar trinkets.

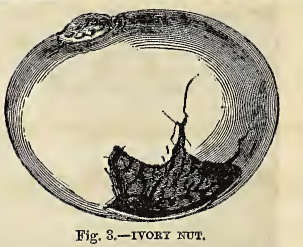


Fig. 3.—IVORY NUT.

* * *

Aunt Sue's Puzzle-Box.

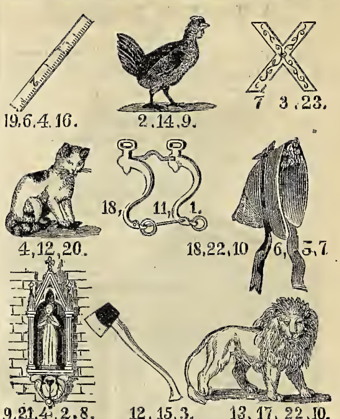
LESSON NO 2,

to the *grown folks* who wish to be instructed in puzzle-making.

"*I* don't know what you mean by 'concealed fish,' 'concealed fruit,' etc.," said a gentleman the other day. "Suppose you tell us all about it."

Well, to "conceal" a word, you must hide it in a closet made of two or three words, or within a longer word. Now, suppose I wanted to conceal a "shark," I think of words ending in s, and beginning with "hark," or ending in "sh," and beginning with "ark."

For instance, "Oh! Thomas, *hark!* there is the rising bell!" You will find the shark "hidden" in the two words "Thomas *hark!*" Or, if we say "Oh! I wish Arkansas were not so far away,"—you will find it concealed in the two words—"wi*sh Ark*ansas." I will hide an animal in the next four words—"*the sixteenth or seventeenth.*" Now, trace the letters regularly by five or six at a time, beginning with the first, thus: "thesix"—"hesixt"—"esixte"; nothing there that looks much like "an animal"! Well, we go on until we get to "thors"—"*horse*": ah! there it is.


19,6,4,16.
2,14,9.
7 3,23.
4,12,20.
18, 11, 1.
18,22,10
6, 5,7
9,21,4,2,8.
12, 15, 3.
13, 17, 22, 10.

No. 460.—**An Illustrated Enigma.**—A very simple and easy illustrated numerical enigma for the little ones. It is composed of 23 letters, and if you get the items right, you will know what the whole is.

It is all very well to be entertained by these puzzles, and to pass a pleasant evening in solving or making them, but if you can add instruction to amusement, do. When concealing anything, let it be something worth finding. Geographical names are good for such use, as it tends to fix the names and location of places in the mind. Rare birds, beasts, flowers, or plants, are useful, as they have a tendency to send those who make or who try to solve the puzzle to books of reference. Now, search the following sentences for the hidden words.

HIDDEN COUNTIES IN OHIO.

1. That is a very dark emerald.
2. It is trimmed in an elegant manner.
3. I have found it difficult to make all ends meet.
4. He sat down on a log and began to whistle.
5. I am going away next week.
6. Take care, that is a pretty cross dog!
7. I met Flora in the street.

HIDDEN DEITIES.

1. Pretty roses.
2. What a large apple!
3. I owe you ten dollars.
4. Shall I not pay you now?
5. Better late than never.
6. Tobacco must be pretty cheap.
7. I had some in a basket.
8. It is neither ornamental nor useful.

* * *

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

SYNCOPATIONS.—1. Pine, pie. 2. Bread, brad. 3. Cord, cod. 4. Pearl, peal. 5. Stream, steam. 6. Horse, hose. 7. Rood, rod. 8. Acre, ace.

DOUBLE ACROSTICS.

1.—A— lmon —D
F— uchsi —A
R— ahwa —Y
I— nconsisten—T
C— air —O
A— gai —N

2.—J—acobini—C
A— w —L
C— hil —I
K— ora —N
S— mel —T
O— rinoe —O
N— inetee —N

NUMERICAL ENIGMA.—And he that overcometh and keepeth my works unto the end, to him will I give power over the nations, and he shall rule them with a rod of iron.

ANAGRAMS,—1. Encroachments. 2. Interlocutor. 3. Acrobatic. 4. Inaugural. 5. Manufacturers. 6. Cultivators. 7. Vouchers. 8. Reconciles. 9. Interpenetrated. 10. Championed.

PUZZLE, No. 1.—London.

POSITIVES AND COMPARATIVES.—1. Show, shower. 2. But, butter. 3. Ring, wringer. 4. Ode, odor. 5. Stag, stagger. 6. Flow, flower.

PUZZLE, No. 2.

H A N N A H
J O S E P H
D O R C A S
O S W A L D
E U N I C E
E U G E N E

Diagonal.

HORACE.

(A. L. S. sends 15 different, but correct answers to this puzzle.)

Thanks for letters, puzzles, etc., to T. M. Clark, G. B., J. W. B. V., "Nutmeg," W. J. F., Oriole, S. S. D., Belle, Jimmie, Mrs. L. L., and E. L. M.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

A Very Puzzling Puzzle.

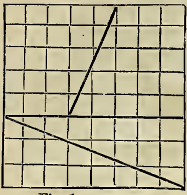


Fig. 1.—SQUARE.

Mr. W. Y. W., Bucks Co., Pa., sends us a puzzle, which he had worked over a long time, and could not make out. As it belongs to Aunt Sue's Department, we sent the puzzle to her; to our surprise she returned it with "I give it up," or words to that effect. Of course, if she could'nt make it out, it must be more difficult than such things usually are, and we follow her advice and print it for others to try at. If it has puzzled Aunt Sue, it is hardly likely that you youngsters can master it—still you can try, and we put it in your columns so that you can ask your older brothers and sisters, and others to try at it. To make the puzzle, take a piece of stiff paper or card, of any convenient size, and exactly square. Then carefully mark eight equal divisions on each side, and rule across; this will divide the square into 64 small squares, as in fig. 1. Now cut the piece as shown by the heavy lines in fig. 1; first divide it in two unequal parts by cutting across three squares from the bottom. Draw a line across from corner to corner of the lower piece, and cut it in two there. Then cut the upper piece in halves, as shown by the heavy line, taking care to get it exact by counting the squares. Your large square will now be in four pieces, which, put together as it was at first, has 8 squares on a side, or 8×8=64 squares in all. Now put the pieces together to form a parallelogram as in fig. 2, and if the work has been nicely done, you will find the small squares will all match. Count them, 5×13=65. Now where does the other square come from? That's the puzzle. No doubt those who are expert in geometry can make it out. Let us hear from them.

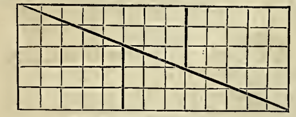


Fig. 2.—PARALLELOGRAM.

* * *

My Pet Birds.

BY J. H. P., FRANKLIN, N. Y.

Two years ago in June, a mother robin built a nest in a low evergreen, a few feet from the house, wisely judging that there she would not be molested by her worst enemy, the crow. Having occasion to pass close to the tree several times a day, and observing that she did not seem to be frightened, I began to take liberties with her, with the idea of seeing how near I could get to her. By slow and gentle movements I approached her nest, laid my hand upon her back, thrust my fingers under her wings, and felt the eggs. She was at first greatly frightened, but after a few days, by frequent handling, she became so gentle that I could put worms and bugs into her mouth, and even lift her off the nest, though she would not let me bear her away more than a foot or two, before she would jump back upon the nest again.

As the little ones increased in size, the old robin found it necessary to spend almost her whole time in hunting food for her little family of four, and consequently could spend but little time upon the nest. Yet in the middle of the afternoon, as the sun poured its heat down between the trees directly upon the nest, she would invariably return to it and cover her little ones until the friendly shadow of the next tree moved over and reached them and the shelter of her wings was no longer needed. And again, when it rained, she would extend her wings over the sides of the nest, so that not a drop of water could fall within. How did she know that the sun and rain would injure her babies? How was she taught to protect them from the heat and wet?

Soon after the old robin commenced sitting upon her eggs, a little sparrow came and made a nest in the same tree, only about eighteen inches from the robin's nest. As a rule, a sitting bird will not allow another bird to intrude in this way, but the sparrow selected the densest part of the tree in which to build her nest, which was completely hidden from view by overhanging branches. The two birds therefore had no reason to quarrel, for they did not know of each other's presence. The little sparrow was even more gentle than the robin, she would allow me to handle her as often as I chose, and would readily take from my fingers almost any kind of food I gave her, such as Indian pudding, boiled potato, bread, cake, meat, and worms of various kinds. When digging in my garden, I used to find cut-worms, which I carefully saved for my sparrow. A small cut-worm she would swallow while sitting upon the nest, but when I gave her a large worm, she would take it and fly off upon the ground, and then seizing it by the head, whip it right and left with great violence, until she had reduced its bulk, and then swallow it. If I gave her an angleworm, or a May-beetle, she would take it, and flying away a rod or two, drop it upon the ground, and then return to the nest. One day, finding a small green worm, I carried it to her, and I was well repaid for my trouble by seeing her rise up and drop it into one of the little mouths beneath. It seemed strange to me that, while she would eat heartily almost any kind of vegetable food I gave her, she would never give a particle of it to her children—for the reason, I suppose, that she regarded small worms more suitable food for baby sparrows. At length both the robins and the sparrows, getting too big for their nests, flew away, and I saw them no more.

The next (last) year the old robin returned, and built a new nest in another evergreen close by, but higher up among the branches. By placing a step-ladder under the tree, however, I could easily reach her, and I found her as tame and gentle as the year before. If she returns again next June, as I hope she will, I intend to study her habits and instincts more closely, and if I learn anything new respecting her, I will report.

* * *

Aunt Sue's Chats.

DOLLIE.—Yes, I can give you a *very* "simple pattern for working babies' flannel petticoats," and one quite effective and pretty. See figure 1. Scallop the edge with semi-circles, about as large as No. 70 cotton-spool would make; you can mark them with a pencil. Then rule, very lightly, four straight lines just above the scallops at *A*, *B*, *C* and *D*. In case you do not know how to make the feather-stitch needed for the *A* and *D* lines, I have given you a hint of the process in figure 2. Be careful to bring out the point of your needle on the pencil-line with every stitch. You can mark the vandyked line (which is to be chain-stitched) with the corner of a square card. When this line is finished, you can very easily mark the required dot in each point. The pattern without the scallop may be worked at the *top* of the hem.

In case you ever have to join a false hem on to a skirt to lengthen it, a line of feather-stitch may be worked over the joining to hide it. With feather-stitch, chain-stitch, and worked dots, you can make many pretty patterns. (See figs. 3 and 4.) A simple way to get the pattern of a scallop is, to draw a circle around your spool at each end of your card (see fig. 5), then draw straight lines from one circle to the other at the top and bottom. Now move your spool along, letting it lap a little bit (unless you want a deeper scallop), and draw your pencil around it. When you have reached the end of your card, draw a straight line (as *A* in fig. 5) near the edge, and cut up to it between your scallops, as shown by the black portion in figure 5. Use Corticelli's embroidering silk, letter F. Linen floss (or white single zephyr worsted) looks very well, washes better, and is less expensive than silk.

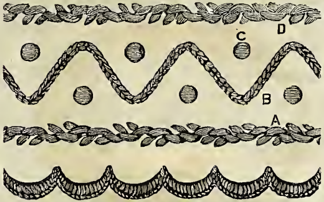


Fig. 1.—DESIGN FOR EMBROIDERY.

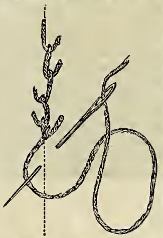


Fig. 2.—FEATHER STITCH.

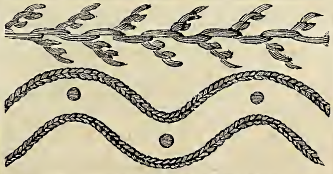


Fig. 3.—PATTERN FOR EMBROIDERY.

GERTRUDE B. asks: "Will you please tell me the difference between cocoa and chocolate."—Both are from the seeds of the Cacao tree of South and Central America, which is very different from the Cocoa-nut tree. The Cacao tree rarely grows taller than 15 feet, and it bears fruit or pods about the size and shape of a common cucumber; these contain from 50 to 100 seeds, much the size and shape of an almond meat, surrounded by a pulp. The pods are buried in the earth, or covered in close tubs for a while, until the pulp has fermented, after which the seeds are taken out, exposed to the sun for several days, when they are ready to use or to send to other countries. Great quantities of these seeds, cocoa beans as they are called, are imported, and various preparations are made from them. Like coffee, they must first be roasted, before they are used, but they are not browned so much as coffee. When roasted, the thick skin or husk of the beans is very brittle, and this is broken and separated from the kernel. These husks are sold as "cocoa-shells" in this country, and as "miserable" in England, and are used by the poorer people. The kernel itself, coarsely broken, and ofted mixed with the husks, is sold here as "cracked cocoa," and in England as "nibs." All the articles called chocolate, and some with other names, are made by grinding the kernels. These contain about half their weight of a kind of fat, and when ground in a stone mill of proper form, and which is kept warm, the cocoa kernels grind up to a smooth paste, which is put into molds, where it hardens, and this is pure chocolate. It is, however, rarely pure. Commonly half their weight of sugar is added to the beans, and vanilla is put in to flavor. This is the kind of chocolate that many like to eat. Then some chocolate is mixed with starch or flour, to make it cheaper, and of course this is a fraud. Various fancy names are given to different preparations of the cocoa bean, such as "Soluble Cocoa," "Homœopathic Chocolate," "Broma," and others. In general, "cocoa" is the name for the whole or merely crushed bean, while chocolate is the proper one for those forms in which it is ground into a paste.

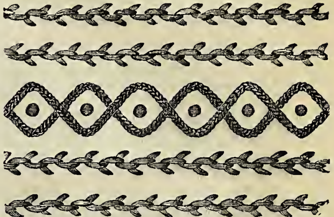


Fig. 4.—ANOTHER PATTERN.

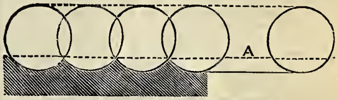


Fig. 5.—HOW TO MAKE A SCALLOP.

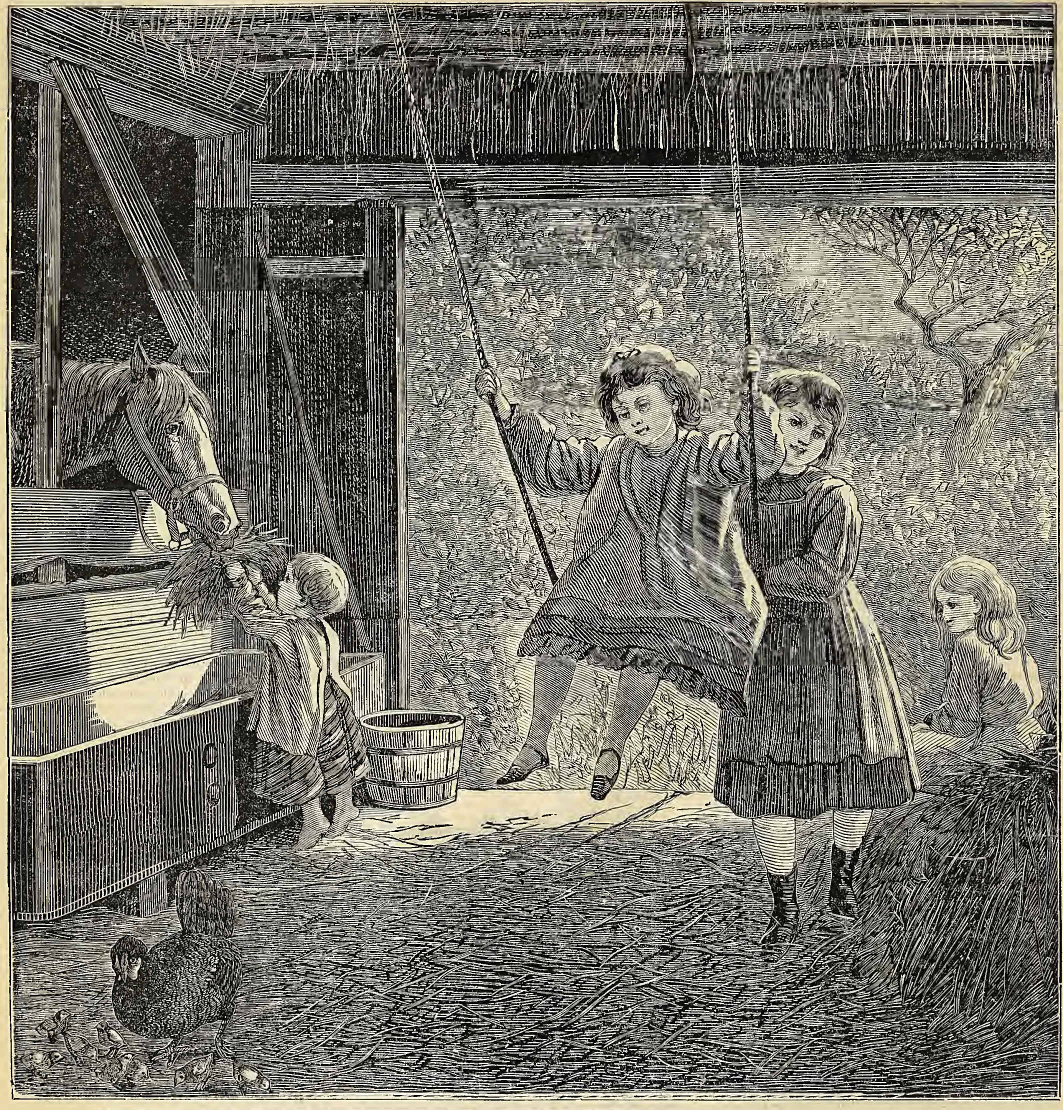
ALICE.—The term, "carnival," is the name of a festival, especially celebrated in Catholic countries, during the week before Lent. It is derived from the Latin "carni," an inflection of *carno*, meaning flesh, and "vale" farewell. It means, really, "good-bye to roast beef," meat being prohibited food during the lenten season.

"W. J. W."—Your enigma is excellent, but a little abstruse. I must take some liberties with it if I publish it.

* * *

A Spring Day in the Country.

"Spring!—When is it spring?"—The answer to this would depend upon where the boy or girl lived; we all know when it is spring with *us*, but our division of the seasons will not answer at all for those who live at the other side of the equator, for there the seasons are reversed. We call March, April, and May, the spring months, but in England spring begins in February, and summer in May. Then astronomers have a spring of their own; their spring begins at what is called the vernal equinox, March 21st, when the days and nights are equal in all parts of the world. If we call April the first spring month, we come very near to the astronomical spring. Our young friends who live in Florida and other far southern places, and those who are in California, have well nigh forgotten about spring, it came so long ago, while this paper will reach some far northern children, who are just watching for butter-cups and dandelions, and other early flowers. Though May is the last of the spring months, as we generally divide the seasons, it will be to many of our little folks the first one in which out-door play can really be enjoyed. March with its bluster, April with its showers, and often long, cold rains, both prepare the way for May, and even a good



IN THE BARN ON A BRIGHT MAY MORNING.—*Drawn and Engraved for the American Agriculturist.*

part of May must pass before the real pleasant days are here. And then how pleasant they are! What can equal a perfect day in May? No doubt many of you, in reading of tropical countries, where frost and snow are not known and winter never comes, think how fine it must be, and it may be that you think the children who live in these countries must have a much pleasanter time than you have. Just think of it! no going to school through the snow with muffler and mittens; no fires to keep up; but summer, with birds and flowers the whole long year. There are many pleasant things about such a country, but in the lands of continual summer, as well as in your own, there are some things lacking. The children in the tropics are deprived of one thing which you, who live farther north can enjoy—that is spring. They may divide up the year into seasons, and call one of them spring, but the real thing they do not know, and they can not see that wonderful awakening that follows the sleep of winter. The birds of the tropics are bright with color and gold, but the note of a blue-bird is better than all the gay plumage, and the greening of the grass, the bursting of the buds, and the sudden clothing of tree and shrub, with leaf and flower, is one of the most wonderful sights in the world, and one which makes us soon forget the few discomforts of winter. Then in these fair May days, when it is more pleasant to be out than in, when we put aside the winter plays, and begin almost a new life, how glad we are that it is not always winter—or always summer either, for without winter there can be no real spring. You whose life is passed in the country, hardly know how much you have to enjoy, which is denied to city children. To be sure, many city children can visit the parks, and see a bit of country there—a piece, as it were, kept as a sample, so that people may not forget that there are brooks, and trees, and grass. But the mass of city children, those of parents whose means force them to live in crowded houses in crowded streets—what do they know of spring! The few street trees put out their foliage, the grass in the little back yard struggles against much tramping, the flower venders come along with their pots of plants, they see green stuff at the corner markets, and notice the changes in the dress of people—and they enjoy even these few sights. But you in the country! be thankful that no brick walls shut out the view of meadow, wood, and mountain, and almost the sky, and that there are none so poor, but they are rich in a share of so much beauty. What will we do in these glad spring days? Indeed there is so much to do that you wonder what you will do first. Let us go to the brook and see how the dam we made last fall has stood the spring floods, and gather marsh marigolds at the water's edge—now over to the woods, where the blood-root is showing its pearly buds, then to the big rock, at the foot of which are always the first violets; let us go home through the orchard, to see if the robins are using their old nests; then to the garden—our little garden, where the flowers are coming on finely, and so are the weeds. Too tired are you to do the weeding now? well then, here is the barn, and the swing, and such a chance to rest! The easy motion of the swing soon makes us forget fatigue; the sunlight streams in at the big door, and without we see the tender green and the tinted blossom buds of the orchard, and the song of birds, and the chirp of the chicks, are among the pleasant sounds that add to our enjoyment of this most charming of days—a perfect day in May.

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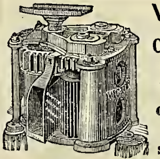

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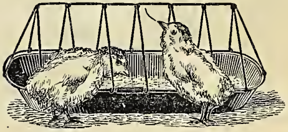

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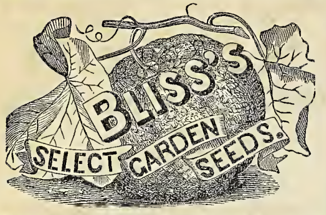

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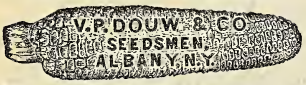

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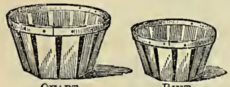

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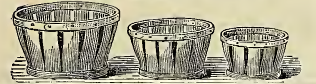

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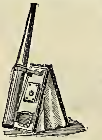

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of 10 acres, one mile from Binghamton, N. Y., well stocked with Small Fruits, good markets, will sell low for cash, or will exchange for N. Y. City Property. Full particulars address J. M. JOHNSON, Binghamton, N. Y.

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For sale by dealers generally. CINCINNATI, OHIO.

NOTE.—Consumers will consult their INTEREST by bearing in mind that a large proportion of the article sold as PURE WHITE LEAD is **adulterated** to the extent of from 50 to 90 per cent; and much of it does not contain a particle of Lead.

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and all other Crops.

Cheapest & Best

IN USE.

Used extensively North and South for four years with great success. Send for our Pamphlet, containing the experiences of scores of farmers, before you buy elsewhere. **Sent Free.**

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Proprietors of the **Brighton Fertilizer** and Importers and dealers in **Nitrate Soda, SULPHATE AMMONIA, MURIATE POTASH, Pure Bone, &c.**

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Purchased from the Peruvian Government; shipped from best Deposit in Peru, and imported directly. For sale in New York or Baltimore. J. J. BARRIL, Consignee,
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As received direct from Peruvian Government Agents.

RUSSELL & Co.'s AMMONIATED SUPERPHOSPHATE OF LIME—the best in the market.

GROUND BONE—the purest and best.

FARM IMPLEMENTS—the latest improved.

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Your attention is called to

Sardy's Phospho-Peruvian Guano
AND
Dissolved Bone Phosphate,

Which, after twelve years' practical test, have proved themselves to be the best and cheapest fertilizers in use, the crops in many instances being

More than doubled by their use,

thereby paying the farmer a profit of from three hundred to five hundred per cent upon the amount invested.
Strictly Pure. Analysis Guaranteed. Send for circular.
A. L. SARDY, Tarrytown, N. Y.

Fish Guano.

Dry Ground Fish Guano, 8 to 10 per cent Ammonia: 15 per cent Bone Phosphate of Lime.

Half-Dry Fish Scrap, good quality. Also **Superphosphate** and **Pine Island Guano.**

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Address **QUINNIPIAC FERTILIZER CO.,**
180 State Street, NEW HAVEN, CONN.

Premium Pure, ODORLESS, Fine Ground RAW BONE, produces luxuriant grass. Sow now on land newly seeded. **Perfectly Inoffensive.** Very popular with Ladies and Gentlemen for house plants, **Lawns,** Gardens, and the Grapery. It never fails in producing grain crops. Send 20 cents for invaluable book, showing composition of cereal grains, and how to grow them. Address,
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HENRY N. HOOPER, Manager Matfield Fertilizer Co.,
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FARMERS—Who will try Green Corn, Millet, Clover, Rye, &c., as recommended in my Pamphlet on **"Farming with Green Manures,"** will please report the result to me.
C. HARLAN, M.D., Wilmington, Delaware.

Special Formula for Tobacco.

We have recently added to our List of Formulas, prepared in accordance with the system of Prof. Ville, a SPECIAL MANURE for TOBACCO, prepared from PURE PERUVIAN GUANO, HIGH GRADE SULPHATE OF POTASH, PURE GROUND DRIED BLOOD or FLESH, and PLASTER.

The composition of this formula will be found to exactly correspond in Ammonia, Phosphoric Acid, and Potash to the demands of the Tobacco Crop. (See Table by Prof. W. O. Atwater given below.)

The Ammonia is reduced proportionately in this formula to one half, leaving, as practised by Prof. Ville, to the natural capacity of the Tobacco plants the absorption of the balance of the Ammonia from the atmosphere.

Removed from the Soil by a Crop of Tobacco:

Leaves....................1,800 lbs., (1,260 lbs. dry.) | Nitrogen ....82 lbs., (equal to Ammonia, 100 lbs.)
Stalks.................... .1,100 lbs. dry. | Phosphoric Acid.......................... 22 lbs.
Potash. ....118 lbs.

1,000 lbs. of this TOBACCO FORMULA contains of:

Nitrogen.......... .....50 lbs. | Phosphoric Acid ... .50 lbs. | Potash...............119 lbs.

all in the **best form** to develop a **normal, healthy growth** of the plants, resulting in the **best quality of leaf,** and largely increased yield.

This formula, as well as all others supplied by us, is furnished at prices based strictly upon our established low schedule of rates, namely, Ammonia, per lb., 17½c.; Phosphoric Acid, per lb., 9c.; Potash, per lb., 7½c.

Price of **TOBACCO FORMULA, Ready Mixed,** per ton of 2,000 lbs., (bags 200 lbs. each)..**$49.34**
Price per ton of 2,000 lbs., when shipped in lots of two tons and upwards in the **form of the Ingredient in their original packages** **$44.34**
No charge for packages. Cartage, 75 cents per ton.

Send for circulars on Ville's Complete Manure, Formulas for Special Crops, Descriptive Price List, Circular on Potash Salts, etc. Address

The Mapes Formula and Peruvian Guano Co.,

CHARLES V. MAPES, General Manager, 158 Front St., New York.

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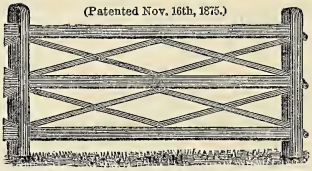
Hand Seed Drills and Wheel Hoes, have also been awarded the **Centennial Medal and Diploma,** and the *Medal* of the *Great Horticultural Exposition, held at Erfurt, Germany,* besides a large number of *First* Premiums at State and County Fairs. Full Descriptive Catalogue of our whole line of goods *free.* Including our *Wrought Frame Horse Hoe, "Iron Age" Cultivator, Paris Green Duster, Hand Garden Plow, Transplanting Hoes, Corn Knives, etc. Every Farmer* should have a copy, and we want a **live agent** at work, or a club formed in **every town.** Send for new terms.
American Agriculturist Premium. **S. L. ALLEN & CO., 119 S. 4th St., Philadelphia, Pa.**

AMERICAN FENCE MANUFACTURING COMPANY.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Manufactory, **Nos. 80, 82, 84 & 86 Mangin St.,**
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where various styles can be seen erected.

Send for descriptive circular to
PRINCIPAL OFFICE, **86 Mangin Street,**
BRANCH OFFICE, **100 East 14th St., N. Y. City.**

Galvanized Cable Fencing.

Proof against **Cattle, Fire,** and **Rust.** Hundreds of miles erected. Handsome, durable, cheap.

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For FARMERS.

Best Tempered Cast-Steel.
Retail Price, 9 Cents per lb.
WARRANTED. ☞ Send for Circular.
Fisher & Norris, Trenton, N. J.
ALL SIZES, from 10 lbs. upwards.

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Insurance Company, of Watertown, N. Y.

Twenty-four years old. Total assets for the security of Policy holders January 1st. 1877, $1,050,622.00. Insures only Farm Property and Residences against fire and lightning. Takes no business risks.

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A cheap and effectual instrument for sharpening knives of Reapers and Mowers, that can be carried with the machine, and used while the team is resting, saving much wear of the machine, and labor of the team. Sent by mail, post-paid, for 30 cents. A liberal discount by the dozen. Try them.
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COTTON SEED HULLER

AND FEED-MILL COMBINED.

D. Kahnweiler's celebrated Patent for Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Highest award at the Centennial Exhibition. Grind and crack Corn, Peas, etc. Planters Power Huller, 15 bushels per hour, $175. Hand Huller, 5 bushels per hour, $75. Send for Circulars and Judges Report. Pay for itself in a few weeks. 120 Centre St., New York.

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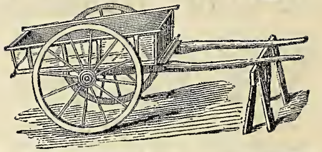

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GIANT POWDER.

MANUFACTURED BY THE
ATLANTIC GIANT POWDER CO.,
61 Park Place, New York.

Price, per lb...........50 cts. | Caps or Exploders, each 02 cts.
Fuse, per 100 feet......75 cts. | Nippers, per pair.........50 cts.
Pamphlets mailed on application to above address.

Woodruff's Portable Barometers and 500 Styles Thermometers.

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REMEMBER
THE
BOYS and GIRLS,
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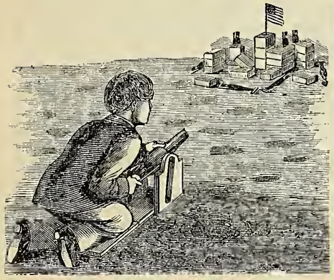
Crandall's Blocks
For Children.

BEAUTIFUL, AMUSING, INSTRUCTIVE.



CRANDALL'S HEAVY ARTILLERY.

The greatest amusement of the age! Recreation at home for all ages and for all seasons! Crandall's Heavy Artillery is made up of a large Cannon, complete, which throws a 1¼-inch Rubber Ball to the distance of 25 feet or more, and Sixty Blocks (Red, White and Blue), to build up Fortifications, also a Company of Soldiers, with Officer and Flag, to Garrison the Fort. The Game is to beat down the Fort by the use of the Big Gun. Rules, Illustrations of a variety of Forts, etc., accompany each box containing the set, and the box is 18 inches long, 6 inches high, and 8 inches wide.

Price per Set, $3.00. *Expressage to be paid by the recipient.*

CRANDALL'S WIDE-AWAKE ALPHABET.

No more long faces and no more tears over A B C! Here we have amusement and instruction combined. Each box contains twenty-seven little men, each representing a letter, with arms, legs, and jolly faces. This set of Blocks is susceptible of more changes, and a greater variety of forms and combinations than any Spelling Block ever offered to the public. The Pieces are durable, the Letters plain, the Faces mirthful, and the Amusement afforded by them unlimited. They please while they instruct, and are a source of enjoyment to young and old.

Price per Box $1.00; *by mail, prepaid,* **$1.50.**

CRANDALL'S JOHN GILPIN.

This beautiful and interesting toy is regarded by Mr. Crandall as one of the best of his inventions for the little folks. It is made up of two figures, John Gilpin—whose highly colored dress is specially attractive to Boys and Girls—and his Horse, which intelligent animal performs a very important part in the illustration of Gilpin's famous ride.

Price per Box $1.00; *by mail, prepaid,* **$1.35.**

CRANDALL'S TOY HORSE.

Here is something that will make glad every little boy that gets it. The Toy Horse is about 6 inches in hight to the tops of his ears. He stands upon a four-wheeled base, all ready to be set in motion by his owner. He is made up in pieces and can be taken apart and laid snugly away in his box.

Price 25 Cts.; *by mail, prepaid,* **35 Cts.**

CRANDALL'S LITTLE ALL-RIGHT.

One of the funniest and most amusing of the low-priced toys. The lively little All-Right throws himself into a great variety of positions as he whirls around the "wheel." Can not be sent by mail. For sale by Toy Dealers generally.

"Ye HERO OF '76."

The great "Centennial Toy." A fine old soldier in a brilliantly colored uniform, with cocked hat, staff, and flag, all put up in a neat box. The Hero is so constructed that he can be placed in almost numberless and amusing positions, and will delight the children everywhere.

Price 35 Cts.; *by mail, prepaid,* **45 Cts.**

CRANDALL'S ACROBATS.

Full of fun and frolic, and most brilliant in costume. These are among the most fascinating and ingenious toys ever invented. The number of figures which can be made with the pieces in a single box is limited only by the ingenuity of the operator.

Price $1.00; *by mail, prepaid,* **$1.25.**

CRANDALL'S MENAGERIE.

One of the most wonderful and amusing things ever brought out for the entertainment of children. The six animals composing the menagerie are beautifully painted, and so arranged into 56 pieces in each box, that tens of thousands of most laughter-provoking figures can be made up with them.

Price $2.00. *[Purchaser will pay express charges. Box too large to go safely by mail.]*

CRANDALL'S BUILDING-BLOCKS.

Can be made into forms of almost endless variety. The blocks are put up in neat, strong boxes, and a large sheet giving various designs of buildings, etc., accompanies each box.

Price—No. 1, $2.00; *by mail, prepaid,* **$2.50.**
No. 3, $1.00; *by mail, prepaid,* **$1.25.**
No. 4, $1.00; *by mail, prepaid,* **$1.15.**

CRANDALL'S ILLUMINATED PICTORIAL ALPHABET CUBES.

These Cubes are gorgeously colored, and will make over 500 beautiful combinations or figures. They are water-proof, odorless, and durable; put up in handsome black walnut boxes; and are most attractive to both young and old—an elegant present for the little ones.

Price $2.50; *by mail, prepaid,* **$3.00.**

CRANDALL'S MASQUERADE-BLOCKS.

Making 300 different and beautiful Combinations of Pictures, which are in very brilliant colors. They are not injured by washing, do not wear out, and afford endless amusement.

Price $1.00; *by mail, prepaid,* **$1.20.**

CRANDALL'S EXPRESSION-BLOCKS.

With Letters on one side, Picture on the other. The Alphabet is the key to the picture which, when complete, represents the inventor in Dream Land. These Blocks are water-proof, and can be washed if soiled.

Price 50 Cts.; *by mail, prepaid,* **70 Cts.**

CRANDALL'S ALPHABET-BLOCKS.
Red, White, and Blue.

Tasteless, odorless, and water-proof. The letters are on red, white, and blue ground. All children are pleased with them.

Price 75 Cts.; *by mail, prepaid,* **$1.00.**

N.B.—*If postage is not remitted with the prices, as above, the blocks will be sent by express at purchaser's expense.*

Orders from the trade will be supplied on liberal terms.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 129.

To Manage Stubborn Cows.—"G. M.," San Bernardino, Cal. To persuade a cow to give down her milk against her will, is a difficult and sometimes a hopeless task. A plan that has been highly spoken of is, to lay a heavy chain across her back while milking her. It is very certain that harshness and impatience will only make matters worse, and that kindness and petting will have the best effect. The use of the milking-tubes recently mentioned in the *American Agriculturist* might be effective. A poor cow, free from this vice, is better than the best cow that is afflicted with it.

Fall Wheat for Spring.—"F. M. H.," Warren Co., Ohio. You can not sow fall wheat in the spring in place of spring wheat, with success in Ohio. It is not a spring wheat district. It is the climate that is the obstacle, and not the kind of wheat sown. In 1870 Ohio produced 27,625,729 bushels of winter wheat, and only 256,400 bushels of spring wheat. In a few of the northern counties spring wheat may be grown. In Warren Co. in 1870, 427,624 bushels of winter wheat were grown, but not one bushel of spring wheat. This is conclusive. Oats or barley should be grown in such localities for spring crops.

Seeding to Clover.—"W. H. A.," Hagerstown, Md. It is not too late to sow clover seed, especially if it is sown alone. In many cases this is to be preferred. The soil should be made as fine and mellow as possible, and the clover sown immediately after the harrow. Then a long plank drawn sideways across the field, will cover the seed very quickly, and will leave the surface smooth. In this way we have had a fine growth of clover, and a very close and perfect stand.

The Color of a Calf's Nose.—"A. S.," Montgomery Co., N. Y. The color of a calf's nose is only skin keep, and can only be a very uncertain indication of the character of the animal. Alone it is of no significance. If the calf is promising in other respects, the color of the nose, whether black, white, red, or mealy, is immaterial. But if the color of the nose is the only good qualification, it will be a very poor calf indeed.

Holstein (?) Cattle.—"New Subscriber," High Bridge, N. J. There are no Holstein cattle in America. Those called by this name are really Dutch cattle from North Holland, and entirely different from the cattle of Holstein. They are large coarse-boned cattle, invariably black and white in color, great milkers, with short horns, are large feeders, and very hardy. They are excellent dairy cows, but to be profitable require a cool moist climate, and luxuriant pastures.

The Best Butter Cows.—"C. McK.," Hudson, N. Y. The best cow for the butter dairy is undoubtedly the grades of the Jersey breed. Mr. Thomas Fitch, of New London, Conn., has made a special business, for many years, of breeding butter cows for family and dairy use, of both grade and pure Jerseys. His opinion of the value of grade Jerseys, was recently given in an article in the *American Agriculturist*, which was widely copied by other journals and favorably noticed, showing that this class of cows stands well in popular estimation.

Coal Ashes for Poultry.—"V. R.," East Morrisania, N. Y. There is nothing better than dry sifted coal ashes to throw into your poultry house during the winter. The fowls pick out of them many pieces which serve in place of gravel in their gizzards, and can dust themselves as they may feel inclined. These ashes are most excellent to absorb the droppings, and should be occasionally scraped up, removed, and preserved in a dry place for use in the garden or fields, of course replacing them by a fresh supply.

A California Plow.—The largest plow, probably, ever used, is one in California, made for Mr. Souther, in Kern Co., for ditching his land. It has a beam 14 feet long, 18 inches deep, and 6 inches thick in the widest part; the mold-board is 10 feet long and 3 feet wide, and makes a furrow 5 feet wide, and 3 feet deep. It weighs a ton, and the chain by which it is hauled, also weighs a ton; 80 oxen and 10 drivers are employed to work it. This immense plow moves about six miles a day, leaving behind it a ditch of the size mentioned.

Fertilizers for Wheat.—"S. W. P.," Marshfield, Vt. Nitrate of soda and potash salts should be used together, one will not replace the other. Generally, the soil is more deficient in potash than in nitrogen, and it is scarcely ever that potash in some shape or other fails to have a favorable effect.

Docking Horses.—"H. M. F.," Hamilton, Pa. It is a very common practice in Europe, (England included), to dock the horse's tails. This is done by cutting off a portion of the young colt's tail. The operation is perfectly safe. The skin is first drawn forward towards the stump, and the tail is separated at a point of the vertabræ. The wound is then cauterized with a hot iron. An instrument made for the purpose is used for severing the tail, which operates instantaneously. The erect carriage of the docked tail is secured by cauterizing the ends of the tendons which run along the upper part of the tail, while the tail is erected, by a pointed iron. This fixes the tendons in their shortened condition, and holds up the tail. It is to be hoped that this barbarous and cruel fashion will not become prevalent in this country.

Caponizing.—"J. A. C.," New Castle, Pa. Directions for caponizing are given in Lewis's "People's Poultry Keeper," for sale at this office, price $1.50. The instruments are sold by H. H. Stoddard, Hartford, Conn. Capons sell very steadily at 25 to 30 cents a pound, when fowls sell from 8 to 20 cents, according to the supply.

Cheap Farms.—"P. A. B.," Lock Haven, Pa. A low-priced farm may be a very dear one. There are hundreds of farms, valued at $15 to $20 an acre, that are really dearer than others at $100 to $200 an acre, because the one requires a large outlay in manures, fences, or buildings, before it can be worked with profit, while the others will return a good profit for labor without any such outlay. It is more profitable to raise 100 bushels of grain at 25 cents a bushel with $10 worth of labor, than to raise 25 bushels at $1 a bushel with $20 worth of labor and fertilizers. This is precisely the difference between the low-priced rich lands of the West, and the low-priced poor lands of the East. But there are other considerations which influence persons in their choice of homes, and thereupon some go west and some stay or go east. On the whole, those who have homes might do better to stay upon them and improve them, than to leave them for a distant one in which they are no better off, and continually regret the change. There is more comfort in contentment than is generally known.

Export of Barley.—A very uncommon arrival recently took place at Queenstown, Ireland; this was a cargo of American barley, shipped from New York. The sample was of excellent quality, and was favorably received. Several other cargoes from New York are reported as being on their way to foreign parts. Up to the present time the trade has flowed the other way, and there have been large imports of barley every year. Barley may now be considered as a staple article of export. To maintain the trade, farmers must take care to produce a good sample, perfect in color.

An Infertile Bull.—"M. C. H.," Stuart, Iowa. Short-horn bulls are not so precocious as Jerseys, and should not be used at so early an age as the latter may be. A Short-horn bull in his second year may serve a few cows, and six or seven in the next year, but if used severely in his second year, the probability is that he will be spoiled for future use. This is probably what is the matter with your animal. It might be useful to keep him one year idle, and break him to the yoke, making him work occasionally. See article respecting this in *American Agriculturist* for August, 1875.

How to Saw a Log True at the Ends.—"O. T. R.," Independence, Ks. Experienced sawyers find no difficulty in sawing logs true at the ends. The saw must be set and filed even on both sides, and then, if the handles are held upright, and a right start is made, the cut must be true. If the saw is badly filed and set, it will run to one side, in spite of a good sawyer. A guide for inexperienced sawyers may be made by fastening a cord around the log in the proper position, and sawing close to it without touching it.

Fertility of Dairy Farms.—"W. W.," Elgin, Ill. Much nonsense is circulated in regard to the rapid loss of fertility of dairy farms, by reason of the carrying away of the phosphates in the milk. Now 1,000 lbs. of milk contain about 3 to 4 lbs. of phosphates, of which nearly the whole is phosphate of lime. Of this less than half is phosphoric acid; 5,000 lbs. of milk, therefore, contain but 7½ lbs. of phosphoric acid, which may be taken as the yearly consumption, in this way, of each cow. As wheat bran contains 2.9 per cent of phosphoric acid, it needs only that about 250 lbs. of bran be fed to each cow, yearly, to replace the draft upon the soil. There are few dairy cows that are fed less than this quantity of either bran, or some food equivalent to it, and it is pretty certain that very little, if any, phosphoric acid is really taken from the soil of dairy farms. On the contrary, to say nothing of the natural supply in the soil, which slowly becomes soluble, there is good reason to believe that every well kept dairy-farm becomes gradually richer in phosphates every year.

Another Good but Nameless Cow.—"Mrs. A.," Passaic Co., N. J., sends an account of her four-year-old cow, which produced 108 lbs. of butter from 23d Nov. to 2nd Feb. last, or 71 days; besides 100 quarts of milk for table use.—The daily yield ranged from 18 to 22 quarts. The cow's pedigree is unnamed and unknown, although she bears a strong resemblance to the Jersey cows pictured in the *American Agriculturist* of February.

Strength of Concrete.—A very valuable and interesting paper was recently read before the British Association of Gas Managers, upon the use of concrete in gas works. It was stated, as the result of very numerous experiments, that a concrete of pure cement, which had a strength represented by 1,200 lbs., when six months old, acquired a strength of 1,600 lbs. in three years; and a concrete of one part cement and two of sand, which had a strength of only 246 lbs. when fresh, at the end of three years resisted 1,174 lbs., and became equally strong as pure cement at six months. The absolute strength of Portland cement concrete, at nine months old, was equal to a pressure of three tons upon a square inch of surface, while good building sandstone resisted only one ton on the square inch. The cement is three times stronger than sandstone. These tests are important to those who may use concrete for building.

To Get Rid of Stumps.—"T. R. M.," Flint, Ind. There have been many foolish things said and printed about saturating stumps with oil or saltpeter, to cause them to burn out, or to set a length of stovepipe on the stump to make a draft so as to consume it. All these plans are useless, and would fail. The practical methods are: to wait until they rot, to pull them out with a stump-puller, to dig them out, or to blast them out. This last method is the cheapest and quickest.

The Berkshire Record.—"J. C. F.," Sabula, Iowa. The Berkskire record can be procured of A. M. Garland, Secretary, Springfield, Ill., for $3. Entries in this record are not a guarantee that the stock is pure bred, as there is only the breeder's word for it, and that is just as good without the record. So far as we know, there is nothing to prevent any person entering any pigs he may please under any name he chooses, as the progeny of sows which may never have had a pig, if he is sufficiently unprincipled.

Sheep Gnawing Fruit Trees.—"G.," Livingston Co., Ill. Sheep will occasionally gnaw the bark of trees, when pastured in an orchard with a good bite of grass. The seem to need something bitter, which the bark supplies to them. If they are regularly provided with salt, they will seldom touch the bark of old trees, except in the winter. To prevent it, take cow dung and clay, and make a paste with which smear the trees as high as the sheep can reach. If some blood is smeared over the bark, it would be equally effective. Either of these will keep off rabbits also.

What is Thoroughbred?—"J. H. S.," Logan, Ind. Five crosses entitle an animal to entry into the Short-horn Herd-book. It is then called a thoroughbred, but it is not in reality. Many years of breeding in a distinct line, or with selected animals of like character, until the progeny reproduce themselves exactly and with certainty, are requisite to make a pure breed, and the direct descendants of such animals are thoroughbred. As the term is now used it is loose and only approximate.

Alsike Clover.—"W. W." Alsike clover is neglected as a fodder plant. It has not succeeded in competition with red clover. Its habit of growth is slender, and it does not yield a heavy burden of stems and leaves. It is not profitable as a hay crop, and its place seems to be chiefly as a help to make up a pasture on low, moist places, where red clover may not succeed so well. Wherever red clover can be grown, we would not advise any one to abandon it for Alsike clover.

The Polled Breeds of Cattle.—A wonderfully strange prejudice exists against cattle without horns. The absurd and contemptuous name "mooley," sticks to them, although they may belong to a breed as old and as high bred as the Short-horns. The Polled Angus Cattle are equal to the best beef breeds living. That they are without horns, is an additional recommendation that should make them very popular amongst graziers and drovers. Without the injurious weapons of attack, they are docile, easily controlled, and the stronger can not abuse or injure the weaker, as it is the nature of all animals to do.

A Variety of Questions.—"F. S." Air-slacked lime is very suitable for liming land—the finer it is the better. There is no better process than air-slacking for preparing lime for land. Lime may be kept for a length of time in air-tight barrels, in a dry place....True molasses will not change into sugar; but if some crystalizable sugar remains in the molasses it will be slowly deposited at the bottom of the vessel. Before using the sugar it needs to be drained; hang it up in a coarse bag..Sorghum of the common variety will ripen in Iowa and will yield molasses, but not sugar. No successful process of making sugar from it has been as yet discovered... Plaster (gypsum) may be sown by hand or by Seymour's broadcast sower. Use 100 pounds per acre....Of lime, 25 to 50 bushels of lime per acre is generally used; scattered upon the surface and never plowed under....Peruvian guano, when pure, is good for all soils and all crops; 150 pounds per acre is a fair quantity to use....Milk and cream for churning should be kept at a temperature of from 40 to 50 degrees.

Diseases of Swine.—Many persons insist that the prevalent diseases of hogs, especially that one known as hog-cholera, is known in no other country, and that America should have all the credit, or discredit, for the possession. But there is nothing new about this disease. It prevails widely and fatally in England, where it goes by its proper name of typhoid or enteric fever. We notice a recent case, in which, of a herd of 32 hogs sent to market in England, 30 died of this disease on the way. If the pretended mystery about this disease were abolished, and it was acknowledged that it has a rational and natural cause, the first and greatest difficulty in the way of preventing it would be removed.

A Mare that won't Plow.—"M. M.," Alexandria, Va. A horse that has not been used to the plow, is rendered fearful by the strangeness of the implement and the manner of hitching. In such cases we break the animal to the plow by first hitching to a log and drawing that, leading the horse by the head. Then hitch to the plow with the point upon a plow shoe, and draw that; then plow a light piece of stubble, for half a day. By patience and kindness any horse may be taught to plow in a short time in this way.

Feeding Hogs for Profit.—"E. S. C.," Douglas Co., Kansas. As the price of pork in the great corn-growing States usually depends upon the price of corn, it ought to be a profitable business to turn corn into pork, even though the corn has to be purchased. It is impossible, however, to tell what future prices may be, and one who goes into such a business as this, may expect to lose money sometimes, and to make a profit at others, to cover his losses. It is not likely he could make money every year, as prices fluctuate so greatly.

Sawdust for Poultry Houses.—"Mrs. R. S. H." Sawdust is not to be recommended for use in a poultry house. It harbors vermin. There is nothing better for the floor of a poultry house, than clean, dry earth upon an earth floor. The floor should be scraped over with a hoe or a broad scraper every week, and the loose earth and droppings removed. They may be stored in barrels, for use upon the garden, or be scattered directly upon it. Then some fresh earth should be thrown in, or fine sifted coal ashes will be useful.

A Sick Horse.—"O. A. G.," Pelham, N. H. Rosin is not a good thing to give to horses for difficulty in urinating. It excites the kidneys for a time, but leaves them worse than before. When the horse has, as yours, a chronic disease of the kidneys, the best course is to give only moistened cut feed, with but little corn, and only sound, good oats, ground with rye or rye bran. One ounce of salt should be given with each feed, and when any trouble occurs, give half an ounce of saltpeter, or one ounce of gunpowder, powdered and mixed with the feed. Never overwork the horse, and never give water when tired, nor more than half a pailful at a time.

No More Gambling at Agricultural Fairs.—The lower branch of the New York Legislature has passed a bill prohibiting pool-selling, both upon or away from race tracks, fixing the penalty for a breach of the law at a fine of $2,000 and two years' imprisonment. This removes one of the chief objections against trotting matches at agricultural fairs, and will go far to induce a more numerous attendance of farmers at these gatherings than heretofore. The example should be followed in every State, and above all things *enforced*.

Three-Horse Eveners.—We have received many descriptions, with illustrations, of eveners for three horses, by the use of which one horse may be enabled to draw on one side of a pole or chain, against two horses on the other, without increasing the length of his end of the evener, or what is equivalent thereto, and without side draft. While we are thankful to our friends for their kindness in sending these illustrations, we are compelled to say that they are all wrong, and that the thing can not be done. No combination of pulleys or levers, can balance two pounds against one, on an equally divided beam, or even suspend these, without making the two pounds tend to draw the support over towards its side.

Minks and Minkeries.—"E. J. N.," Fort Plain, N. Y. The only minkery in existence, that we know of, is that of Henry Resseque, Verona, Oneida Co., N. Y. Wild minks could probably be procured of R. E. Robinson, Ferrisburg, Vermont.

Prices of Short-horns.—The speculative prices of pure-bred Short-horns seem to have reached their limit. Instead of thousands of dollars, hundreds can now buy one of the cream of the herds. It has not been an evil, perhaps, that this fine breed of cattle has been the foot-ball of speculators for some years, as it has brought them to the notice of every reading farmer. Now that they have reached about their intrinsic value, farmers who can raise heavy beef cattle, or heavy dairy cows, may provide themselves with pure bred bulls at moderate prices. At a sale of the Excelsior herd some time ago, bulls were sold for from $45 to $230, which latter figure was the highest price paid for a bull. However much the herd may have deserved the name given to it, there was not much "excelsior" about these prices, and this is a source of gratification to those who wish to see the noble breed filling its proper and important place in agriculture.

Fertilizer for Wheat.—"G. P.," Trumbull Co., Ohio. One of the best artificial fertilizers for wheat, to be applied in the spring, is nitrate of soda. 100 lbs. of this, per acre, should be sown evenly over the wheat as soon as it begins to grow in the spring.

Prevention of Over-reaching.—"J. L. L.," Martinsburg, W. Va. The clicking noise, caused by the toe of the hind shoe striking the heel of the fore shoe when a horse is trotting, is the effect of what is known as over-reaching. This may be prevented by lengthening the toes of the hind shoes, and shortening those of the fore ones. This will enable the horse to lift the fore foot a little quicker, and will slightly retard the hind feet; but it is enough to clear the fore foot. A very small fraction of a second, probably a hundreth part of one, will be sufficient gain of time to prevent the contact.

Muck and Marl.—"S.," Easton, Md. A compost, to be of any effect, must have some active fermentible matter in it. Muck and shell marl together would be quite inert, but if caustic lime were mixed with a quantity of these materials, they would be decomposed and made useful. One bushel of fresh oyster-shell lime, mixed with a wagon-load of the muck and marl, would be proper. The compost, along with some stable manure, would be beneficial for grass or corn.

Corn on Fall Plowing.—"E. H. C.," Lee Co., Ill. Upon prairie soils, where much is planted, fall-plowing will be proper for corn, but where clover-sod is to be turned under, and the breadth planted is small, spring-plowing is preferable. Corn starts into growth quicker, the weeds are not so numerous, and the crop thrives better upon ground plowed just before planting. Where corn is largely planted, fall-plowing must necessarily be done.

Shed with movable Roof.—"B. E. B.," Fayette Co., Ind. A shed that will be useful to stack wheat under, is described and illustrated in the *American Agriculturist* of October, 1875. The roof can be raised or lowered, and is held in the desired place by pins inserted in the posts.

Value of a Phosphate.—"W. W. C.," Harford Co., Md. A phosphate containing 3 per cent of soluble phosphoric acid; 4 per cent. of reverted and 5 per cent of insoluble, with 1¾ per cent of ammonia, is worth about $25 a ton. It is a very poor fertilizer.

Technical Education.—To know how to do one thing well is, under our present circumstances, more valuable, than to partly know how to do many things. The tendency now is, to make a single chosen pursuit the business of one's life, and this is made necessary by the present close competition in all industries and professions, in which a person who knows but little of the technical portions of them, can not compete with those who are experienced and expert. It is so in farming, in which there is now so great a competition, that only expert men can succeed satisfactorily. Others may make a living at the business, but that one may live comfortably, and improve his circumstances, he must have a *thorough* acquaintance with his art, and a sufficient knowledge of the other arts and the sciences, with which his own is very closely connected. Without this knowledge, he has an uphill struggle, and meets with so many losses and disappointments, and so many failures, that he becomes discouraged. Is not this the reason why so many farmers are desirous of changing their positions; of selling-out, and going to some new place, of which "distance lends enchantment to the view?"

Swelled Legs in a Horse.—"S. W. S.," Ansonia, Conn. The fact that a horse's legs swell more when kept standing upon a plank floor, than when he stands upon the earth, should be sufficient to induce a change of floor to be made. It may be that the floor slopes backward too much, and thus throwing too much strain on the hind legs, causes the swelling. Too much standing in the stable will, in some horses, produce this effect. Perhaps a remedy may be found in keeping the horse in a roomy loose box (12 x 12 feet), in which he can move about freely. The legs may be bathed in cold water in the evening, and rubbed perfectly dry with a coarse woolen cloth, using considerable friction.

Western Kansas.—"C. C. K.," Edwards Co., Kan. We would not advise persons to engage in farming in the extreme western part of Kansas, unless irrigation is practised. The advantages of irrigation in this locality are discussed favorably in a new work on Irrigation, by Henry Stewart, published by the Orange Judd Co., which might be consulted with benefit. In that part of Kansas there are ample facilities for profitable irrigation. The country is well adapted to stock raising.

Fertilizers for Mangels.—"J. E. S.," Greensboro, N. C. Superphosphate of lime and salt, along with barn-yard manure, are the proper fertilizers for mangels. We doubt if a good crop can be grown without the barn-yard manure, and with it alone good crops are raised. But with a moderate quantity, say 6 or 8 loads per acre, plowed in in the drills, and 200 lbs. of superphosphate, with 300 lbs. of salt per acre, scattered along the rows as soon as the plants appear, a profitable crop ought to be grown.

Sundry Farming Matters.

Breeding Sows.—"O. O. F." If it is desired to breed from a sow twice in a year, she should be turned out the third day after pigging. But it is not every sow that will breed so early, and young sows are especially averse to it.....**Poke for Breachy Animals.**—"S. J. B.," Orange Co. The length of the poke, of whatever kind it may be, must be proportioned to the size and kind of the animal that is to wear it. If there is any danger of chafing the skin, that must be provided for in padding or shaping the poke.... **Compost for Corn.**—"G. M. P.," Franklin, Tenn. There is no danger of corn heating, when planted in drills with well rotted compost. The compost will not decompose any further, and hence can not heat.. ..**"No Milk in the Bag."**—"A. G.," Passaic Co., N. J. One can not reasonably look for milk in a cow's udder two months before she comes in. There may be a thick, watery fluid or serum in the udder, which is nothing to be alarmed at.....**Corn Drill for Planting two Rows.**—"M. S.," Muscoda, Wis. Machines for planting two rows of corn at once, are only used in the West. The Vandiver corn planter, made by the Vandiver Co., Quincy, Ill., is extensively used. ...**Soil for Mangels.**—"Subscriber," Hudson, N. Y. A good sandy loam is excellent for mangels. Superphosphate of lime, and very fine ground bone-dust, (flour of bone), if pure, are good fertilizers for this crop.....**Mowers that will Cut Lodged Grass.**—"M.," West Middlesex, Pa. The machine that most successfully cut the rolled grass at the Centennial trials, was a new one, of which we do not remember the name. If the owners do not wish to let the public know the merits of their machine, we can not help it. .. **Brick Making.**—"G. W. L.," Dallas Co., Iowa. The process of making bricks by hand, was described and illustrated in the *American Agriculturist* for Febuary and April, 1872. ...**Cheese and Butter Factories.**—"W. W. F.," Clark Co., Ind. Descriptions of some butter and cheese factories, with several illustrations, were given in the *American Agriculturist* for April, 1874, which may be had. .... **Broom-making Machinery.**—"D. B.," Shreve, Ohio. The machinery is described in a small book, entitled "Broom-Corn and Brooms," which can be procured of the Orange Judd Company for 50 cents.

Catalogues Received.

NURSERYMEN.

C. H. Banta, Riverdale, Bergen Co., N. J. General assortment of fruit and ornamental trees.

D. C. Benton, Quincy, Ill., has greenhouse and bedding plants in addition to nursery stock.

Bronson, Hopkins & Co., Geneva, N. Y., send a wholesale price-list of their extensive stock.

Seth A. Bushnell, Oberlin, O., has, besides the usual varieties, a number of specialties in apples, etc.

B. P. Davenport, Saline, Mich.—Small fruits and vegetable plants.

Downer & Brother, Fairview, Ky.—A wholesale list of the nursery long favorably known as their father's.

Thos. Jackson, Portland, Me.—Fruits and forest trees, with nursery grown and wild evergreens.

Fred. W. Kelsey, Rochester, N. Y.—Large variety of fruit and ornamental trees. Select lists of the best trees of various classes.

J. W. Manning, Reading, Mass., sends an essay on tree planting, with his wholesale list of fruit and ornamental trees.

Polk & Hyatt, Odessa, Del.—General list, with a very great variety of peaches.

C. S. Pratt, North Reading, Mass.—Full list of small fruits.

I. E. Remsburg, Atchinson, Kas., puts his catalogue in the form of the "Rockland Fruit Farm Annual," in which the Col. Cheney Strawberry, occupies the largest space.

D. B. Wier, Lacon, Ill.—Fruit trees, with specialties of hardy sorts; ornamental trees and shrubs.

SEEDSMEN.

D. C. Brainard, Mt. Lebanon, N. Y.—A handsomely illustrated catalogue of flower and Shaker's vegetable seeds; also a useful Almanac and Rural Register.

John Lewis Childs, Queens, N. Y.—Flower and Vegetable Seeds, Bulbs, and Plants.

Samuel N. Cox, St. Joseph, Mo.—Remarkably neat and full catalogue of seeds and greenhouse plants.

Crosman Brothers, Rochester, N. Y.—A full illustrated catalogue, with novelties in vegetables and flowers.

Hawkins & Cornish, Goshen, Orange Co., N. Y.—Garden and field seeds, with various novelties, especially in potatoes.

C. F. Lane, Koskonong, Wis.—A very instructive and well classified catalogue, including apiary requisites.

Aaron Low, Essex, Mass.—Garden and flower seeds, including several local specialties; also implements.

Price & Knickerbocker, Albany, N. Y.—Seeds and horticultural implements; fully illustrated.

W. H. Spooner, Boston, Mass., has removed to 98 Fremont St., near Horticultural Hall.

William Rennie, Toronto, Canada.—Grass, grain, and other field seeds, including field peas.

H. W. Williams & Son, Batavia, Ill.—Potato catalogue, with a full treatise on cultivation.

FLORISTS.

D. C. Benton, Quincy, Ill.—A general stock, including novelties.

Dingee Conard Co., West Grove Pa.—A New Guide to Rose Culture, including a long catalogue of roses, of which the firm make a specialty.

J. K. & S. J. Galloway, Montgomery, O.—Greenhouse and bedding plants at wonderfully low rates.

M. Michel, Bryan, Brazos Co., Tex.—Bedding and vegetable plants.

John Saul, Washington, D. C., issues a special catalogue of roses, including the novelties of 1877, and the older sorts.

H. W. Williams, Batavia, Ill.—A very full descriptive list, with novelties.

MOWERS, REAPERS, AND OTHER IMPLEMENTS.

Adriance Platt & Co., Poughkeepsie, N. Y., and 165 Greenwich St., city of New York, issue a beautifully executed illustrated catalogue of their Buckeye Mowers and Reapers. This is the twentieth annual circular, and, as since the first, this justly celebrated implement has been improving in every possible way to keep pace with every modern requirement, the new Model Buckeyes may be considered to have attained "the highest standard of excellence."

H. B. Griffing & Co., 60 Cortland St., New York city.—Catalogue of agricultural implements, seeds, fertilizers, and bone-meal, and beef scraps for feeding purposes.

Gardner B. Weeks, Syracuse, N. Y.—Descriptive circular of Chapman's Railway Hay Pitching and Stacking Outfit. Also catalogue of dairy supplies and apparatus.

Fisher & Norris, Trenton, N. J.—Price-list of anvils and double-parallel leg screw vise.

John B. Varney, South Berwick, Me.—Circular and price-list of Varney's Standard Plows.

Thomas Peppler, Hightstown, N. J.—The Climax Plow and Cultivator Combined.

P. S. Wiseman, Toledo, Ohio.—Illustrated circular of Wiseman's Register for measuring grain from the spout of thrashing machines.

FERTILIZERS AND MISCELLANEOUS.

A. E. Cooper, Cooper's Plains, Steuben Co., N. Y. —The "Cooper Chair" in remarkable variety of styles.

Rafferty & Williams, manufacturers of bone and blood fertilizers.

The Mapes Formula & Peruvian Guano Co., No. 158 Front St., New York, send a "Descriptive Price Current," which gives the names, guaranteed composition, and prices of an astonishing number of articles, which are or may be used as fertilizers.

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IT HAS THE LARGEST SALE OF ANY LAWN MOWER IN THE WORLD.

It has been adopted, and can be seen in practical operation on **Central Park** and all the other **City Parks, New York; Government Grounds** and **City Parks, Washington; Boston Common, Boston; Prospect Park, Brooklyn;** and on almost every prominent Park throughout the **United States and Canada.**

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Four sizes for hand-power; four sizes for horse-power.

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N. B.—We call **special attention** to our new **HORSE MOWER.** Gears entirely covered and weight reduced 200 lbs. It is the **LIGHTEST and BEST HORSE MOWER EVER MADE.**

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Celebrated Excelsior Lawn Mower.
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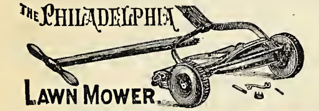

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J. M. CHILDS & Co., 12 & 14 Fayette St., Utica, N. Y.
STEELE & AVERY, 44 & 46 State St., Rochester, N. Y.
EVERSON, FRISSELLE & Co., 10 So. Salina St., Syracuse, N.Y.
T. HAWLEY & Co., 93 Water St., Bridgeport, Conn.

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HAY LOADER.

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Guaranteed to do double the work of common scrapers, and do it easier for man and team. But one man required to work it. No hand-work to finish up a road. Good roads can be made with them at 25 cents per rod. Broad open ditches at 10 cents. Townships and counties can take them on trial. Price $13, on cars at factory. Send for Manual of Road Making and Ditching, free. Address

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Send for circular giving mode of culture, soil, &c.

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Small Fruit Plants a Specialty. Good stock, low prices. See page 114 (March No.) JOHN S. COLLINS.

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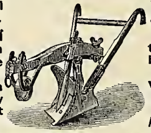

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All Sizes.

Do the work of best steel plows, while much cheaper to repair.
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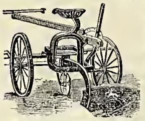

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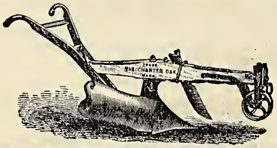

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Yours truly, CHESTER SAGE.

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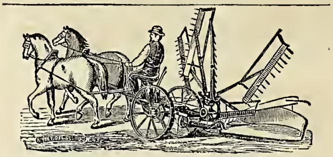

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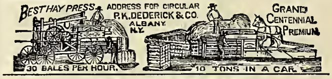
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30 BALES PER HOUR.
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Hay Pitching Apparatus,

consisting of Grapple Fork, Carrier, Pulleys, and Hooks. It pitches long and short fine hay, straw, grain, and corn stalks in the bundle. It certainly is the best. Send for circular.

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Chapman's. Best Fork and Conveyor in use. Unloads and carries Hay, Grains, &c., over deep mows, into sheds, barns, &c. Saves labor, time, money. Sent on trial. Circulars sent. Agents wanted.

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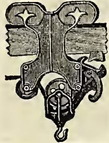
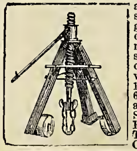


The Anti-Friction Hay Carrier

Saves labor and money. It is simple; the grappling positive; it runs on friction rolls, hence will come back on slight incline. The track is inexpensive; the carrier costs but a trifle; **many hundreds are in use.** No trouble about getting over high beams, or to the end of deep bays. Hay is dropped where wanted, and the work of mowing is reduced. **Track should be put up now while barns are full.**

Send for circulars and designs for tracking barn, to **U. S. Wind Engine & Pump Co., Batavia, Ill.,** manufacturers of the Old Reliable Halladay Standard Wind Mill.

The Chamberlin Screw Stump Machine,



after 10 years test, has proved its superiority over all others, by its great exhibition of strength and durability, combined with cheapness and ease in pulling all classes of stumps. The Company's challenge of $1000 for a stump machine which would excel theirs, has stood since 1867 without being taken. They build 6 different sizes of machines, to pull all kinds of stumps. They make Subsoilers and Ditching Plows. For Particulars, Prices, etc., address THE CHAMBERLIN M'F'G CO., Olean, N. Y.

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A wonderful Raspberry. Send for a circular.
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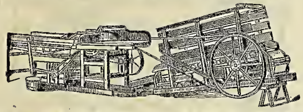
HEEBNER'S IMPROVED

Level Tread Railway Horse Power and Speed Regulator.



Horses' feet stand level on floor of Power; labor and fatigue of the horse diminished; power increased; money saved. Smooth-shod horses work on them better than rough-shod on the old style Powers; have a slower walk for horse. These Powers are single or double-geared, for one or two horses, with the only successful SPEED REGULATOR in the world. We also have the simplest, most desirable and cheapest Threshers, Separators and Cleaners, for one or two horses. These Powers and Machines will do more work, with less labor for horse or operator, than any other; pronounced superior by every purchaser. Have on record in our office a large list of First Premiums, Diplomas and Medals of State and County Fairs in the United States. We are the Proprietors of the Patents and Sole Manufacturers. ESTABLISHED IN 1840. ☞ Send for Circulars, and learn of the great success of these Machines. Address

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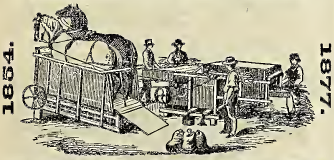

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THRESHING MACHINES & HORSE POWERS
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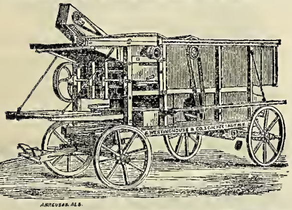

Threshers for all sizes of Horse Powers and Steam, Lever Powers for 4 to 10 Horses, and Endless Chain Powers for 2 and 3 Horses—and Engines from 4 to 10 Horse Power. All with late and important improvements. Send for Circular.
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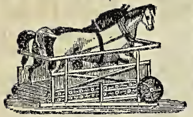

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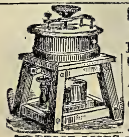

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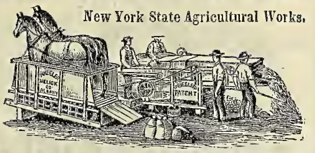

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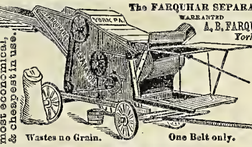

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Lightest Draft, most durable, simplest, most economical, & cheapest in use.

Wastes no Grain. One Belt only.

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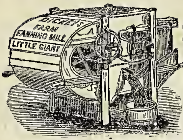
The Best Fanning Mill in the World.



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No good Farmer can afford to market dirty grain.

A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

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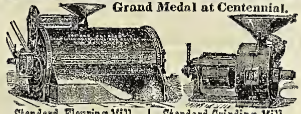

Standard Flouring Mill.	Standard Grinding Mill.
Scourer, Grinder and Bolter.	For all substances wet or dry.
8 feet long by 4 feet high.	Built of burr stone and iron.
Runs with belt 4 inches wide.	For heavy or light power.
Flours 3 to 6 bushels per hour.	Capacity of 20 inch stones.
Has double ventilating bolter.	Equal to any larger size.
For flour, middlings and bran.	Thickest French burr stones.
Gives every one his own grist.	Double discharge spouts.
Makes the best flour and yield.	Adjustable babbitt boxes.
Is a reliable flouring mill.	Solid self-adjusting burrs.

Centennial Judges award medal on ☞ *these portable, vertical mills for solidity and good workmanship, economy and adaptability.* ☜

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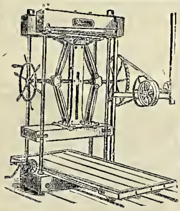

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WITH
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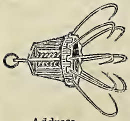

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A safe and ingenious device for catching fish, animals, game, &c. Sample, 50 cts., by mail, or send stamp for circular.

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SMOKY CHIMNEYS cured, fuel saved, and heat increased by applying the Spiral Draft. Send stamp for circular (with testimonials) to HENRY COLFORD, 726 Sansom St., Phil'a, Pa.

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for all kinds of Seeds, and to be drawn by horse.

Price of Planter, $25; of Horse Hoe or Fertilizer Attachment, $3 each extra.

Agents wanted everywhere to sell the above and our other new **IMPLEMENTS and MACHINES,** and **FERTILIZERS,** to whom liberal commission will be paid.

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Send stamp for circulars.

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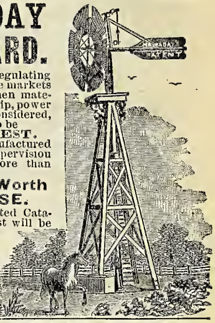

The first Self-Regulating Wind Mill offered the markets of the world, and when material used, workmanship, power and durability are considered, it is acknowledged to be

THE CHEAPEST.

It has been manufactured under immediate supervision of inventor for more than twenty-two years.

$3,000,000 Worth NOW IN USE.

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THE DRIVEN WELL.

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"UNIVERSAL FORCE PUMPS."

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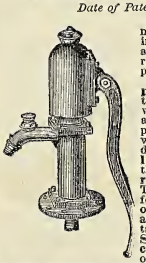

After six years endeavor to furnish the most reliable force pumps in the market, the above pumps are respectfully offered as the best results, in my judgment, of the public requirements.

Their **adaptability, great power, careful finish** in detail, and consequent **economy,** will commend them. In case of accident, any part can be easily replaced, without sacrificing the whole pump. They can be immediately converted from **right** to **left-hand pumps,** by swiveling the air-chamber and handle to any required angle with the spout. They are changeable from lift to force pumps. Are for the house or for out-door wells of any depth, and having close tops, can not be tampered with.—**Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

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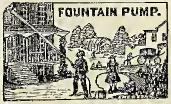
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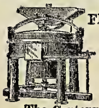

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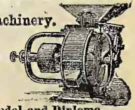

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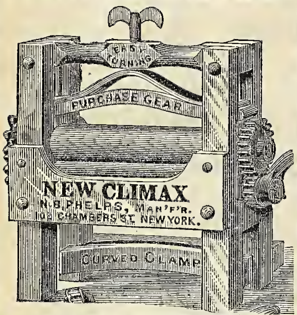
The "NEW CLIMAX" CLOTHES WRINGER.

It turns with half the labor of the old style Wringers.



Take it on Trial with any other, and buy the Best.

THE PURCHASE GEAR causes the wringer to *turn with half the labor* of other wringers.

Be satisfied as to the merits of a *Purchase Gear* before buying an *old-fashioned* cog-wheel wringer. Sold everywhere.

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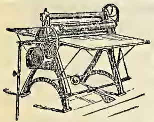

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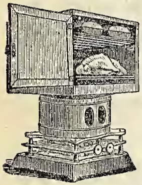
FLORENCE OIL STOVE,
For Heating or Cooking.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TWO STOVES IN ONE.
Safe,
Odorless and Durable.

Can be used without chimney-flues, as it generates no smoke or noxious gases.

Meats and Bread cooked by this stove are better flavored and more digestible than when cooked by coal or wood.

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The **FLORENCE** received the **only** Centennial Medal awarded to Oil Stoves. *Report of the Judges*: "It is simple in construction, easily managed, and well adapted to its intended purpose."

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THE BEST SEWING MACHINES.
General Agencies—**39** Union Square, New York; **476** Washington St., Boston; **66** Lake St., Chicago.
AGENTS WANTED EVERYWHERE.

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100,000 in use by men, women and children.

Used standing, sitting or reclining.

Hundreds of graceful movements.

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$1,200 a YEAR, CLEAR, FAMILY NECESSITY. *Vienna Pressed Yeast*; makes *world-renowned Vienna Bread, etc.* AGENTS in every county to wholesale and retail. Put up for family use. Sample and circulars, post-paid, 10 cts.
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AUTOMATIC
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Send Postal Card for Illustrated Price List, &c.
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BROWN'S FRENCH DRESSING

will make Ladies' and Children's Boots and Shoes that have become rough and red, and Ladies' Traveling Bags which look so old and rusty that they are ashamed to carry them, look just as good as new. It will not rub off or smut when wet. Softens the leather.

No lady will be without it after one trial. Beware of imitations and counterfeits. For sale everywhere.

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Constructed in strict accordance with **Anatomical Law**, Superior to any corset of American or Foreign make, sent post-paid on receipt of $1.50, and your size—Guaranteed! Agents wanted. Send stamp for circulars.
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Keep's Custom Shirts made to measure.
The very best, 6 for $9, delivered free everywhere.
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An elegant set of Gold plate collar and sleeve
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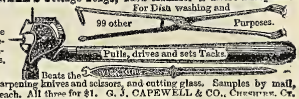
Keep Manufacturing Co., 165 Mercer St., New York.

Sole Manufacturer of
WHEEL CHAIRS
ONLY. ALL Styles and Sizes.
For Invalids and Cripples.

Easily propelled, in or out-doors, by *any* one having the use of hands. Send stamp for Illustrated Catalogue and prices of different styles. Designer and manuf. of the "Rolling Chairs" used at the Centennial. **HERBERT S. SMITH, 32 Platt St., New York.**
Please mention this paper.

CAPEWELL'S Pottage Tongs, Tack Hammer & Knife Sharpener.

These are all household conveniences.



world sharpening knives and scissors, and cutting glass. Samples by mail, 35 cents each. All three for $1. G. J. CAPEWELL & CO., Cheshire, Ct.

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Is one of those inventions that commends itself to the **PRACTICAL MAN** as the **COMMON-SENSE SPRING**, being a side-spring without the unpleasant and dangerous side motion of the Concord, and obviating the jerking of the Elliptic. Being without perch, gives independent action to each wheel, making them much more durable. The **SPRINGS** are made of special **CRUCIBLE STEEL**, and are fully warranted.

The **DEXTER** supplies a want long felt by the **Farmer, Business Man,** and **Physician,** as it gives them the easiest riding and most durable **SPRING VEHICLE** known, and much less liable to break than the ordinary spring, on account of quality and form.

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Rice's Patent Spring Brace.

"THAT ALTERS THE CASE."

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Takes well everywhere.

Will do twice the service and ride easier. $3 to $5 put on. Agents wanted. Address
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Uniformly, without regard to season or climate. A pamphlet, descriptive of this newly-discovered system, sent free to any one sending address, with 3ct. stamp, to the
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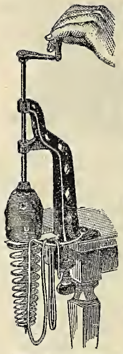
THE "SARATOGA"
Potato Peeler and Slicer.



Slices and Peels at one Operation.
Removes the Eyes Completely.

Vegetables Cook dryer, sweeter, quicker, more even, and drain off dry when cooked.

Are Cut uniformly in less time, and an absolute saving of 50 per cent in waste.

The Spiral Cut prevents adhering, and allows the bitter parts to cook or soak out, as in Potatoes, Onions, Cucumbers, etc.

For Drying, Curing, Evaporating or Preserving Vegetables, is unequaled.

For Hashing, Stripping, Soups, Mince-meat, Pickles, Dressings, &c., Fruits and Vegetables—chop even and quick, avoiding lumps, which will not cook through.

In short, is a simple, desirable, cheap and useful household machine, which housekeepers should have.

Sent by mail, prepaid, on receipt of $1.00.
GOODELL COMPANY, Antrim, N. H.,
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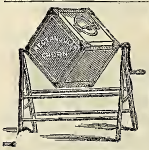
HIGHEST AWARD AT THE CENTENNIAL.

Warranted to be exactly as represented. Sold by all dealers in *really* first class Farm Machinery.

Made only by PORTER BLANCHARD'S SONS, Concord, N. H. Send for Circulars.



The Rectangular Churn
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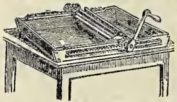

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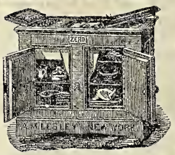

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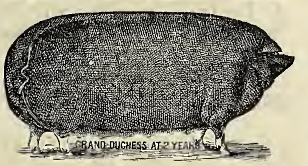

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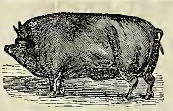

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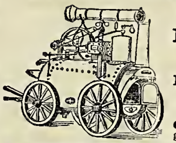

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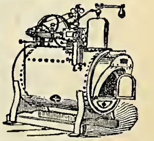

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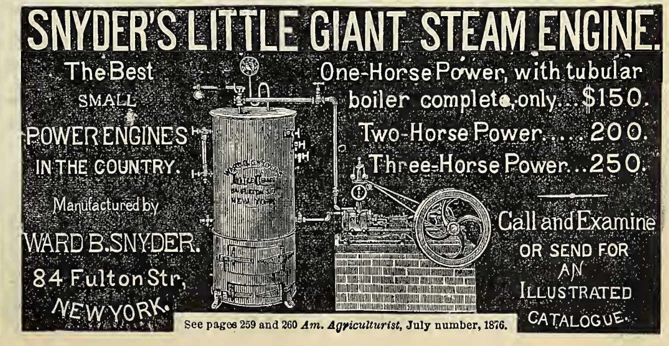

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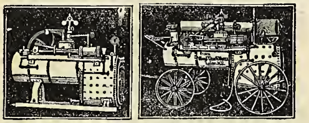

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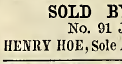

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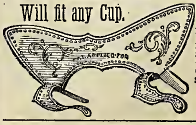

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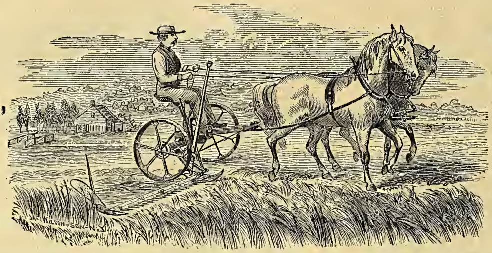

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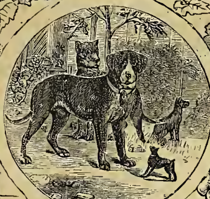

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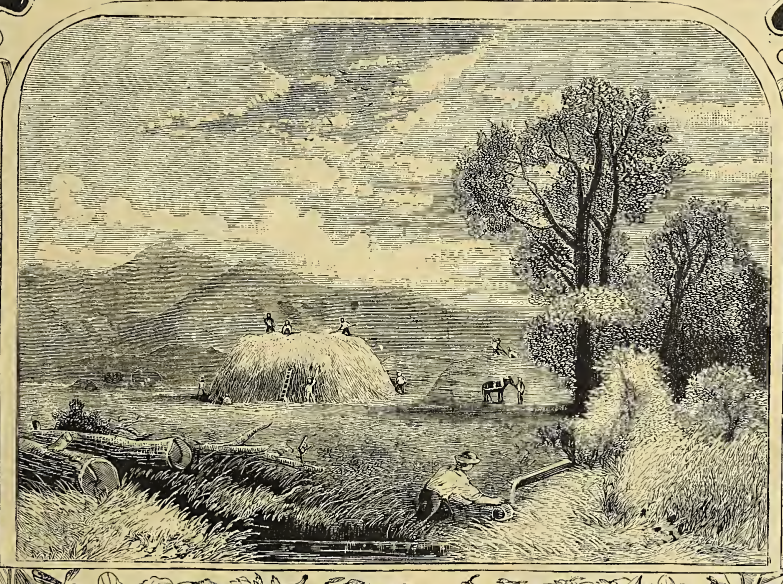

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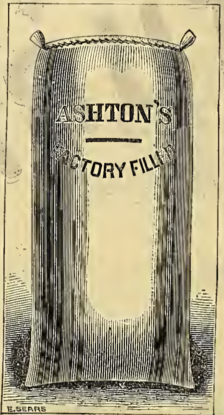

It has come to our knowledge that salt manufacturers and others are issuing circulars in the United States claiming their salt is equal to Ashton's Factory Filled Salt, and as proof they publish certain tests by chemical analysis. We beg to say that consumers of salt ought not to be deceived by such representations, as such analysis does not determine whether one brand of salt is as good or suitable for a particular purpose as another. For instance, St. Martin's Salt may, by analysis, prove as pure as Ashton's, and yet St. Martin's Salt is suitable for beef and pork packing and is entirely unfit for butter, on account of its *grain*, whilst Ashton's Salt is unsuitable for beef and pork packing, yet is just the quality and grain required for butter making. Misrepresentations have been made with regard not only to the quality of Ashton's Salt, but also to the sacking. With reference to the quality of the salt, we say that the same care is taken to-day in its manufacture as for more than half a century. Also that the process of manufacture is the same which originally secured the grain and quality which has so distinguished it from the beginning, and which has secured for it a precedence over all other brands of salt. Our process of manufacture, differing from that to which any other salt is subjected, makes **ASHTON'S FACTORY FILLED SALT** uniform in grain, free from all impurities, while in quality it is exactly what is best suited for the manufacture of butter, into which it dissolves uniformly, and it is a fact too well known for even notice here, that butter must be **uniformly** salted to make it of the highest quality. We do not ask butter manufacturers of the United States to accept our word alone as proof that the quality of **ASHTON'S FACTORY FILLED SALT** is the best that can be used for their purposes, for we are in possession of many certificates from eminent merchants, and responsible butter makers, of its quality, and offer from a few sources, which will at once be recognized as important and commanding, letters which will speak for themselves, since they come from a district that has secured for its butter manufacture the highest market prices. It is well known that Orange Co. butter has realized the first position in the New York market, on account of its quality, and that the highest price is paid for the same. Therefore the following letters from Messrs. Homer Ramsdell & Co., Messrs. W. O. Maeller & Co., and Mr. E. T. Skidmore, of Newburgh, Orange Co., N. Y., all of whom have been for over a quarter of a century distributors of salt in this dairy district, will command the attention of butter makers everywhere.

NEWBURGH, N. Y., January 10th, 1877.—*Gentlemen:*—It is our opinion that Ashton's Factory Filled Salt is the best salt imported into the United States, and we have no doubt that the excellence of Orange Co. butter was and is maintained through the almost exclusive use of this brand of salt. Yours truly, (Signed) HOMER RAMSDELL & CO.

NEWBURGH, N. Y., January 13th, 1877.—*Gentlemen:*—Your inquiry with reference to salt used for butter purposes is at hand. On account of our experience with Ashton's and other brands of Liverpool salt, we should not consider it right or even prudent to recommend any brand except Ashton's for butter manufacture, because in weight and quality it never varies. (Signed) W. O. MAELLER & CO.

NEWBURGH, N. Y., January 15th, 1877.—*Gentlemen:*—I have not the slightest doubt that the superior quality of Orange Co. butter was and is due to the use of Ashton's Salt, which I consider the best and only safe salt to use in butter making, and I could not recommend any other brand. Several years ago I tried to introduce domestic salt against Ashton's, but complaints against butter made with it compelled me to abandon the attempt, and go back to Ashton's. Yours truly, (Signed) E. T. SKIDMORE.

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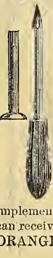

In June of 1872 we gave illustrations of a Trochar and Cannula to be used in ringing a bull, and on page 13 (January) and page 97 (March) of the *American Agriculturist* for 1873 (copies of which may be got from this office for 15 cents each) we described the use of this apparatus in relieving hoven in cattle. These articles have brought out a large demand for Trochars, and failing to find just the right kind among the makers of surgical implements, we have induced an establishment to undertake their manufacture. We give herewith a small engraving of the Trochar. These articles are now in the trade, and may be had of most dealers in agricultural implements. Those who can not get them from dealers can receive them from this office, prepaid, for $1.00.

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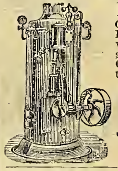

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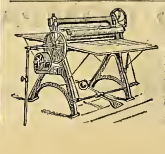

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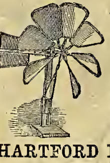

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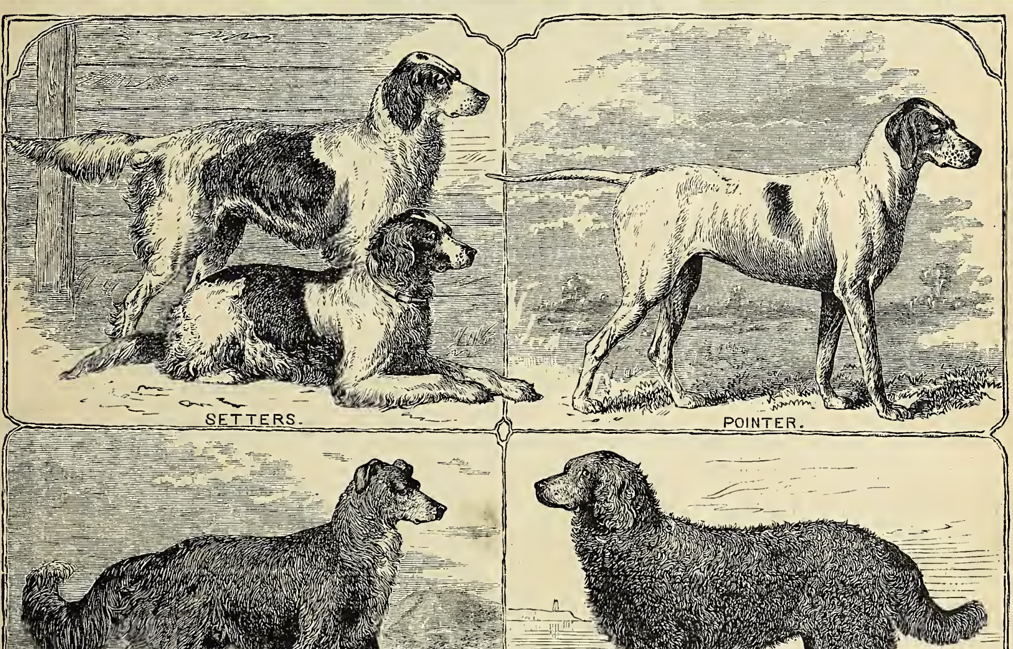

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Calendar for June.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	F	4 25	7 30	11 48	4 30	7 25	11 46	4 36	7 19	11 42
2	S	4 25	7 31	morn	4 30	7 25	morn	4 36	7 20	morn
3	**S**	4 25	7 31	0 11	4 30	7 26	0 10	4 35	7 20	0 6
4	M	4 24	7 32	0 30	4 29	7 27	0 29	4 35	7 21	0 28
5	T	4 24	7 33	0 48	4 29	7 27	0 48	4 35	7 22	0 48
6	W	4 23	7 34	1 6	4 29	7 28	1 7	4 34	7 23	1 9
7	T	4 23	7 34	1 27	4 28	7 29	1 30	4 34	7 23	1 32
8	F	4 23	7 35	1 51	4 28	7 29	1 55	4 34	7 24	1 59
9	S	4 22	7 35	2 21	4 28	7 30	2 26	4 34	7 24	2 31
10	**S**	4 22	7 36	sets	4 28	7 30	sets	4 34	7 25	sets.
11	M	4 22	7 37	8 23	4 28	7 31	8 14	4 34	7 25	8 7
12	T	4 22	7 37	9 19	4 28	7 31	9 11	4 34	7 25	9 5
13	W	4 22	7 37	10 5	4 28	7 32	10 0	4 34	7 26	0 53
14	T	4 22	7 38	10 40	4 28	7 32	10 35	4 34	7 26	10 31
15	F	4 22	7 38	11 9	4 28	7 33	11 6	4 34	7 27	11 3
16	S	4 22	7 39	11 34	4 28	7 33	11 33	4 34	7 27	11 31
17	**S**	4 22	7 39	11 55	4 28	7 33	11 55	4 34	7 28	11 56
18	M	4 22	7 40	morn	4 28	7 34	morn	4 34	7 28	morn
19	T	4 22	7 40	0 17	4 28	7 34	0 19	4 34	7 28	0 20
20	W	4 22	7 40	0 40	4 29	7 34	0 43	4 34	7 28	0 47
21	T	4 23	7 40	1 5	4 29	7 34	1 9	4 35	7 28	1 13
22	F	4 23	7 40	1 35	4 29	7 35	1 42	4 35	7 29	1 47
23	S	4 23	7 41	2 12	4 29	7 35	2 19	4 35	7 29	2 26
24	**S**	4 24	7 41	2 55	4 30	7 35	3 3	4 35	7 29	3 11
25	M	4 24	7 41	rises	4 30	7 35	rises	4 36	7 29	rises
26	T	4 25	7 41	8 55	4 30	7 35	8 48	4 36	7 29	8 42
27	W	4 25	7 41	9 26	4 31	7 35	9 21	4 37	7 29	9 15
28	T	4 25	7 41	9 53	4 31	7 35	9 49	4 37	7 29	9 45
29	F	4 26	7 41	10 14	4 32	7 35	10 11	4 37	7 29	10 8
30	S	4 26	7 41	10 34	4 32	7 35	10 32	4 38	7 29	10 30

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	4	0 27 mo.	0 15 mo.	0 3 mo	11 51 3d.	11 21 3d.
New M'n	11	9 48 mo.	9 36 mo.	9 24 mo	9 12 mo.	8 42 mo.
1st Quart	18	1 40 mo.	1 28 mo.	1 16 mo	1 4 mo.	0 34 mo.
Full M'n	25	0 9 ev.	11 57 mo.	11 45 mo	11 33 mo.	11 3 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1877.

The reports of the growing wheat crop are generally favorable. A large majority declare the condition of the crop to indicate a full average, and more than half speak of a promise of above an average yield. A comparatively small number of places are threatened with a partial loss of crop, California presenting the least hopeful condition, on account of a serious drouth. So far as our own observation and information extends, we consider the promise of the crop to be very favorable, and if dry weather should not interfere, a fair harvest may be expected. At the same time, the country is bare of wheat, and the foreign demand is larger than usual. The experience of the past few years goes to show, that there will be no danger of "over-production" in the future. We need not fear to raise as large crops as we can. The foreign market is large and steady, and will need all we can produce in the way of grains, meats, provisions and dairy produce, to supply it. The low prices of the past few years have brought this about, and therefore have not been by any means an unmitigated evil. While we have been depressed and troubled by a reduced income from our farms, which has sorely embarrassed those who have been in debt, this has been the means of stimulating farmers generally, to do better by their farms than they had formerly done. In no previous period has stock been so much improved as during the few years just past, and we have, in consequence, found a market in England for meat, which has saved our home market from demoralization. At no time before the present, has there been so much of artificial fertilizing, and never before so anxious inquiry about the possibility of enlarging the crops, and using the most effective economy in farming operations. In the mean time thousands of persons are entering into agriculture from other industries; the wave of western emigration has broken upon a shore, where the land, although valuable for pasture, is not arable, and it now flows back again upon the neglected lands of the East, which are being restored again to their former fruitfulness, by means of more skillful cultivation. There is now a closing up of scattered ranks, and the farming interest is becoming consolidated. As population may increase, during the next twenty-five years, to double its present limit, and we have a hundred million mouths to feed in our own country alone, all the resources and skill of the farmer will be taxed to meet the demand for his products. The value of farms can hardly fail to increase year by year, on these accounts, and it will be the farmer's interest to see that he neglects no means of making his more valuable property pay a higher interest than now. This can only be done by making it more productive.

◆

Hints for Work.

Plant every thing possible, early this month. Early kinds of corn may be put in the ground until the middle of the month, with certainty of ripening as soon as late sorts planted earlier. Or it may be planted closer for fodder.

Fodder Corn is one of the most valuable crops, especially for a dairyman. By and by we shall probably begin to preserve corn-fodder in pits and trenches, just as brewers' grains are now kept by many American dairymen, or as corn-fodder is preserved by many foreign farmers. The process, known as *ensilage*, was fully described, with illustrations, in the *American Agriculturist* for June, 1875. It would be well to refer to or procure this number, and study the process. Fodder-corn may be planted in rows 2½ feet apart, with seed dropped two inches apart in the row. Cultivate with horse-hoe as soon as the corn is above ground.

Beans are becoming a more profitable crop, now that additional attention is given to them. When planted in rows 2½ feet apart, 4 or 5 beans may be dropped every foot. By planting with the Albany planter, the beans may be dropped in a continuous row, 3 inches apart. The seed should go into light land, at least 3 inches deep in the moist soil.

Potatoes will need very close attention. It is not at all improbable that many careless farmers will lose their crop through inattention, and that the price will again be high in the fall. The Colorado beetle may be kept down by care and Paris Green, as has been frequently explained. (See page 207.) ["Potato Pests," a new book, sent, post-paid, from this office, for 50 cents, will be very valuable].

Cultivation, thorough and frequent, will greatly help all drill-sown crops, as corn, potatoes, and roots, enabling them to resist dry weather, and make a strong growth. This is very important for the potato crop, under the attacks of the beetles.

Ruta-Bagas should be sown this month; refer to the directions for root crops in previous months, as to preparation of the soil. Two pounds of seed per acre, should be sown, and it will be better to sow in drills, either with a hand or horse-planter. The rows may be made 27 to 30 inches apart, and 200 lbs. of superphosphate, drilled with the seed, will force the crop ahead of the fly. If the fly attacks them, use finely slacked lime, dry sifted coal ashes, or soot, freely sifted over them.

Mangels or Sugar Beets should be ready to hoe and thin out. 12 to 15 inches apart, is a proper distance, and vacant spaces may be filled by transplanting plants from places where they are too thick. Take up the plants with a trowel with the earth around them, without disturbing the roots. Share's horse-hoe is excellent for cultivating these root crops.

Summer-Fallows.—In some rare cases it may be well to summer-fallow. To kill weeds that are difficult to destroy and very plentiful, or to break up raw, heavy clay soils, this nearly obsolete operation may still be practised. But now it can rarely pay to keep the soil idle a whole season, when there are so many green crops that may be grown to advantage for cleaning the ground, and artificial fertilizing is so well understood. When a summer-fallow is thought advisable, begin by plowing deeply this month, before weeds have seeded the ground.

Preparing for Harvest.—No time should be lost in getting ready for haying. It would pay to procure a mowing machine and a horse-rake, if money has to be borrowed for the purpose, where ten acres of hay have to be made. In choosing machines, durability and ease of working should be looked to first; low price is a secondary consideration. Some valuable improvements in harvesting machinery have recently been noticed in the *American Agri-*

culturist, to which reference should be made when choosing a mower. When scythes are used, the rhomboidal scythe-sharpener will be found very effective. Mowers, rakes, scythes, hay-racks, barns, and stack bottoms, and any other needed facilities, should all be made ready for work without delay.

A Tool Shed is a necessity on every farm. Here should be kept machines, implements, tools, wheelbarrows, and all spare things of every sort that usually lie around loose. Every thing should be kept in its proper place, so that it could be found in the dark if needed. Habits of neatness and regularity are learned in keeping a tool shed in proper order, more, perhaps, than in any other place on the farm. When neatness in little things is learned, greater things are always taken care of.

Clover Hay is worth much more when cut early, than when cut late. Professor Atwater has given the readers of the *American Agriculturist* some very valuable hints in this respect, which should be well studied and remembered. We prefer to rake up clover before it is completely dried, and cure it in the cock for at least 24 hours. This method considerably increases the value of the hay.

The Dairy.—Cows are now in their prime, and justice should be done them, by using care and skill in the dairy. June butter is the best of the season, and may be packed, so as to keep perfectly for a year. Use only the best quality of salt, the price of which is really of no object, considering that only one ounce of it goes to a pound of butter; and the difference in the quality of the salt may easily make 5 or 10 cents a pound variation in the value of the butter.

Water.—Provide pure, fresh water for the cows, and when thinking of them, do not forget their owners, who suffer very often in health and comfort from using impure water. See that no drains, manure piles, or cesspools leak into the well, and keep the ground around it high, so that no surface-water can soak into it. A good pump should be attached to the well, and a galvanized iron pipe will prevent any bad taste in the water.

Pasture.—Do not overstock the pasture. Keep a good growth by feeding a little dry feed or grain in the evening, and bringing up the stock early. A dressing of 60 lbs. of salt or of nitrate of soda per acre will be useful to the grass, if given early this month; but when the soda is used, it should be spread during a shower of rain, so that it is at once dissolved and carried into the soil.

Sheep and Lambs.—Ewes and lambs will thrive all the better for a little extra feed. The lambs should be fed in a place by themselves, to which they can gain access easily. An enclosure, known as a "lamb-creep," will be found useful. This is a fence with openings, through which the lambs can pass, but the sheep can not. Pure water should be provided for both ewes and lambs, where they can have constant access to it.

Dipping Sheep.—To free the lambs from ticks, which worry them after the ewes have been sheared, they should be dipped. Buchan's Cresylic dip is effective in freeing the lambs from this pest.

Tagging both sheep and lambs, should not be neglected, while feeding on young grass. If looseness of the bowels occurs, the wool should be closely clipped, and if the disorder should become troublesome, a tablespoonful of peppermint water, and a teaspoonful of prepared chalk mixed with it, may be given to each lamb with good effect.

Pigs.—A piece of pasture should by all means be provided for the swine, especially for young pigs. This ensures health and healthful growth. An acre or two of orchard seeded to clover, with an open shed for shelter during storms, would be found very valuable. Keep only grade pigs of a good breed, and feed liberally; this is the secret of cheap pork. A mixture of salt, sulphur, and charcoal, given occasionally, will be useful; 4 ounces of each will be enough for a week's supply for 12 full-grown pigs. Pure water should be given plentifully.

Read the Advertisements.—Almost every day inquiries are made about matters and things which are described in the columns devoted to advertising. These matters are of great interest, and should be looked over every month. If anything is wanted, the back numbers should be referred to. It would be strange to find any useful thing missing from the columns during the past few years.

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Notes on Orchard and Garden Work.

As hinted last month, whatever the earlier part of the season may have been, June 1st, take one year with another, usually finds vegetation advanced to a certain point. In June we stand at the end of most of the preparatory work, and, with but few exceptions, in advance of the harvest. Yet it is by no means an idle month, when the orchardist and gardener can enjoy his summer respite, and in that trip to the sea shore, to the mountains, or elsewhere, that he has been looking forward to.

Orchard and Nursery.

Planting being over, the young trees should not be left to shirk for themselves. One of the important things is to

Look to the Labels.—If in the hurry of planting the labels put on at the nursery were left on the trees, these must be attended to at once. They are not intended to be permanent, and are usually put on with iron wire and twisted tight. If left, the season's growth having no chance to expand, the tree will often be strangled by the wire, and well nigh ruined. We have often repeated that no one should depend upon labels, but there should be such a record that every tree on the place may be known by its position. Where the trees are in regular rows, this record is easily kept. Still, until one gets acquainted with his trees, and learned the name of each row, or single tree, labels are convenient. Use lead wire, a strip of "lace-leather," or something that will not injure the growing tree.

Mulching, in a very dry season, will save the lives of young trees, and it is always useful. See last month's "Fruit Garden."....How much future trouble would be saved if we would recollect that

Green Shoots become Woody.—What is now a tender quick-growing sprout, will in October be a strong woody branch, and perhaps a branch just where it is not wanted, and which must be removed by the use of a saw or strong knife. At the right time, the shoot could have been rubbed off, and not only the trouble of removing the branch avoided, but the useless growth would have been directed to parts where it was needed. Some one has called this

"*Anticipative Pruning*," and it is really that. If one has a careful eye to his young trees, he can, by rubbing off a bud or shoot here, and pinching a shoot there, so direct the growth that by the time the trees come into bearing, they will be of proper form, and very little work will be required of the pruning saw and chisel.

Pruning.—If large limbs are to be removed from neglected trees, this month or next (according to locality—at any rate, when the spring growth is made and the leaves have attained full size and substance) is by many preferred for the work, as wounds now heal rapidly. Cut all large wounds smooth with a drawing knife, and cover with shellac varnish, melted grafting wax, or thick paint.

Grafts set this spring must be looked to, and if shoots start from the stock, to rob them of nourishment, rub them off. It is often the case that one bud on a cion will start and make a vigorous growth of a single unbranched shoot, which will be whipped about, and likely be broken by the winds. The growth from a graft should be treated as if it were a young tree planted in the ground, instead of the wood of another tree, and properly shaped by pinching the ends of the too rapid-growing shoots.

Thinning Fruit is another important work of the month, and is especially needed upon young trees just coming into bearing. As relating to this, see "Changing the Bearing Year," on p. 182 last month. See what was said in last month's Notes on thinning. That it will pay in many cases, there is no doubt. Just which kinds of fruit may be profitably thinned, can only be learned by experience. With choice pears and with peaches it will generally give good returns. At the present writing, the prospects are good for a large crop of peaches. In such years

Only the Best Fruit Pays.—Fine, large, well-colored peaches will bring a fair price, at times when the common will hardly pay the cost of handling. The one way to get the very best is to thin, and severely. Three-fourths of the set may often be taken off and leave a full crop.

Fruit Crates and Baskets should be provided in season. Ascertain from the commission dealer what kind of packages will be most in demand.... Another important work for the month is the

Fight with Insects.—N. B.—If a chap offers to sell you something to put *on* the tree to kill borers *in* the tree, tell him to "git." If one wants you to buy a recipe for a "tree invigorator," you may pay $5 for directions to mix soft soap, sulphur, and copperas, to paint on trees—but you had better show him the front gate. If some good friend tells you to bore an inch and a quarter hole in the tree (mind the size), put in a lump of sulphur, or a teaspoonful of calomel, and then put in a pine plug, (be sure and use pine, for a cork may spoil the job), and that you can thus so sulphurize or mercurialize the plums that the curculio won't hurt them—don't do it. If people only understood

The ways of Insects, and more about "matters and things in general," they would throw away no money on useless applications, and waste no time in spoiling their trees with auger holes.

As to Curculios, there is but one way with them thus far known. After hundreds of experiments by careful men, with every proposed medication, application, and botheration, nothing but catching and killing is of the slightest use. Some of them may be caught by smoothing the ground around the trees, and placing pieces of board here and there; those that hide under these boards may be caught and killed. Still, many will go upon the trees, and these must be jarred off early in the morning, caught on a cloth and killed.

Borers do not breed in the tree, as some suppose. Every borer in the trees *went* in. The parent, winged insect, laid the egg on the bark, the little borer hatched out, at once bored its way into the tree, and there it will stay until it comes out as a perfect insect, or is cut out, or is punched to death in the hole. But please observe, no patent stuff that is to be laid in the crotch of the tree, no stuff that you may paint on the trunk, no "invigorator," or any thing that you apply to the soil to be taken up by the roots and thus poison the borer, will be of any earthly use. While you are fussing with such treatment, the borer is quietly at work, perhaps stopping now and then, to laugh at the folly of the performance. Cut with knife and punch with wire.

The Slug, so called, but which is really a caterpillar, will appear, especially on the pear and cherry leaves, and, unless checked, often make sad work. It is a dark-green leech-like creature, that leaves a slimy trail. Slaked lime, dusted from a coarse bag at the end of a pole, will soon end it. In a dry time fine dust from the road may be thrown into the trees with good effect.

Marketing.—Our southern friends should know that while early peaches will sell well, they must be *peaches*. The miserable things that have been sent for the past two or three years, with the hope of being early, have injured those who sent them. Little woolly, green hard things, as large as hickory nuts, or larger, had better be fed to the pigs—if they will eat them. Such fruit (?) can neither be sold nor given away, in the New York or other northern markets. So with early apples—they should be carefully assorted, and come in good shape, or they will not sell.

Odds and Ends.—Keep the weeds down in nursery rows.....Weed seed beds, and if they are not already sheltered, do not wait for the seedlings to suffer, before shade of some kind is applied, as directed last month.....When a caterpillar's web is discovered, do not sleep until you know that it and its contents are disposed of.

Fruit Garden.

What is said under "Orchard" about mulching, insects, etc., applies also to the fruit garden, and much in last month's Notes should be heeded now, and we refer to them to avoid repetition.

Marketing begins with the strawberry, and the harvesting will be done this month in northern localities. We gave last month, on p. 178, so full an article on the "Berry Season," that nothing is to be added.

Blackberries and Raspberries.—Next season's fruiting is to be provided for by the shoots or stalks now growing. Tie up, to prevent accidents, such of these as are to remain, and hoe up all others. In picking, raspberries require delicate handling, as they crush easily. When the picking is over, cut out the canes that have fruited.

Black-Caps do not sucker, but throw up new stems from the base of the plant; these should not be allowed to become too crowded; remove all the shoots not wanted while they are young.

Thinning is even more necessary on dwarf than on standard pears, as they are more apt to overbear.

Grape Vines will need frequent attention. As the shoots grow they must be tied to the trellis, or a high wind will either break or entangle them. Remove all shoots that start where canes are not wanted, and in case of double buds, take out one shoot, taking the weaker one. In close pruning, the shoots are stopped (by pinching off their ends) just above the uppermost cluster. Some leave but a single leaf, and think it better than two, three, or more. We are governed by the form of trellis, preferring to keep that filled with foliage, to following any set rule....Treat rose-bugs and mildew as noted last month....Soon the large beetles and the large caterpillars will appear; they are never very numerous, and the only remedy is hand-picking.

Kitchen and Market Garden.

The lively time with the weeds fairly sets in this month. It is well to bear in mind that a weed that to-day has so slight a hold on the soil that it is killed as easily as a tender exotic, in a few days will be so well established, as to be difficult of removal. Some one has said that "the time to kill weeds is just before they appear," and if taken to mean, "just before they make much show," it is true. The use of

The Rake is not half understood or appreciated. A heavy steel rake, with long and sharp teeth, is one of the most effective weed-killing implements we have. It gets over the surface rapidly, and if run over the surface, will uproot the young weeds and leave them where the sun will soon finish them. The rake is not a complete substitute for those that stir the soil more deeply and thoroughly, but it is an indispensable aid to these if one would keep the garden clear.

Succession crops should be looked out for. The season of many vegetables, which remain for but a short time in their best condition, may be greatly prolonged by proper forethought, in sowing at intervals. For example, we make it a point to have green corn daily, from the first picking until frost puts an end to the season. If there is a surplus, it does not come amiss, as the ears, allowed to get harder than their table condition, are a great treat to the pigs, and the fodder is cured for the cows.

Unoccupied soil should never be seen in the garden. As soon as one crop is off, give the soil a freshening up with manure, and put in something. Recollect that weeds will have to be killed at any rate, and it is better to have the work of doing this turned to account of some crop. Judgment must be used in the choice of things to occupy the land. The plants will have to endure the hottest part of the season, and lettuce, radishes, spinach, peas, etc., would fail, while beans, and all of the cucumber and squash family will be suited. It is well to have extra cabbage plants for this use.

Asparagus should have a rest when peas are ready. When cutting is stopped, the plants soon so shade the ground that few weeds will grow.

Beans.—Plant bush sorts in succession, and in northern localities it will be early enough for Limas.

Beets.—Thin and weed; sow succession crops of early sorts, for beet greens, as well as the roots.

Cabbages.—As soon as the crop of early is off, prepare the ground for celery or other late crops. Set out plants of medium late sorts.

Carrots sown early in the month will usually make a good crop. Stir the ground whenever the plants begin to break through. Thin and weed in the rows as soon as large enough to handle, leaving at least 4 in. between them.

Celery.—Keep the seed-bed free of weeds; some for early use may be set from the middle to the end of the month.

Cucumbers.—Hurry their growth. To keep off the striped bug, some put a rag on a stick which is so stuck in the ground that the wind will flutter it over them, and scare off the bugs. White hellebore has been used with success. Plant for pickles the last of this or the first week of next month.

Egg Plants.—In view of the great fondness of the potato-bug for these, it is well to grow in pots until of good size, and then put out in a rich spot. Hand-pick the insects or poison them.

Melons.—Plant, if any have failed. They need the same care as cucumbers.

Okra may be sown where it is to stand.

Onions.—Weed and keep the soil clear between the rows; some give a dressing of salt, thinking it prevents the smut.

Peas rarely do well when planted late. If tried, sow them six inches deep in the coolest part of the garden, using the early kinds.

Potatoes.—The early sorts in the garden require the same care as those in field culture. Poison must be used, or there will be no crop; see hints for farm-work, and items in the "Basket" pages.

Rhubarb.—Cut away the flower-stalks, and pull but little for use.

Spinach.—Sow the New Zealand in well-manured hills. It is slow at first, but soon grows rapidly.

Squashes may still be sown. For striped bug see cucumbers. Hand-pick the squash-bugs, and crush their eggs, which are laid on the under side of the leaf. For the borer it is recommended to cover the stem with earth for two or three feet from the root. In working the soil do not disturb the vines, but allow them to root.

Sweet Potatoes.—Plant on well-manured ridges. See a full article on culture in March last, page 100.

Tomatoes.—Set out for late crop. In garden they should be kept trained to a trellis, to stakes, or in some way, to keep them in order, and the fruit from the ground.

Turnips of the ruta-baga sorts may be sown at the end of the month.

Odds and Ends.—A pig seems an almost necessary adjunct to a garden, or perhaps it would be better to say that a garden is necessary to the pig. At any rate, with a little care in gathering it, the refuse of the garden will go far towards the summer support of the pig.....Root crops, beets, carrots, parsnips, salsify, and scorzonera are rarely sufficiently thinned; the larger kinds should have at least 4 in., and 6 in. space between them would be better. Salsify, by thinning, may be had of twice the usual size, and make a great saving of time in preparing....If seeds are to be saved of any vegetables, select beforehand the earliest and best for this purpose, and allow none to be used from it..... Herbs.—Have a supply of the seasoning articles provided for the kitchen.....Weeds are to be fought first, last, and all the time—*except* when the ground is wet. The lance-headed hoe described last month cannot be too highly recommended; it doesn't look like much, but we could hardly do without it. Indeed, we have them made by the half dozen.

Flower Garden and Lawn.

The Notes of last month will be just as applicable now, and may be re-read with profit.

The Lawn-Mower should be used in well-established lawns at least once a week. If the grass has been allowed to get too long for the clippings to be left on the grass, rake them off.

A Grass-Hook or sickle will be needed for places inaccessible to the machine. This should be kept sharp by the use of a scythe-stone.

Trees and Shrubs.—What has been said under "Orchard" about shaping trees by the early removal of shoots not needed, and pinching, may be applied to ornamental trees and shrubs.....All the

Bedding Plants should be out now. Where there are lines of different colors they must be kept distinct by pinching back those disposed to interfere with their neighbors.

The Tender Plants from the greenhouse that are to be used outside, should be placed where winds will not injure them; they often suffer from these.

Odds and Ends.—Whether a place be large or small, neatness should always be regarded before show.....A well kept kitchen-garden is more pleasing than a neglected flower-garden.....If the ornamental grounds can not be kept in order with the force that can be afforded, they are too large..... Good keeping is made up of little things. Have all margins, where the grass borders a walk, or a flower-bed, carefully trimmed.....Every scrap of paper, chip, or other matter should be kept off of the lawn as carefully as from the best carpet..... Stakes are often required to hold tall-growing weak plants and flower-stems; they can be used and be out of sight. Avoid the horrible green things, with white, pine-apple-shaped tops; one doesn't wear gaudy crutches.....When a plant goes out of flower, cut away the clusters, unless seeds are wanted; in that case it is better to have the seed-bearers in a reserve ground.....See last month's Notes about insects on roses.....Many shrubs may be propagated from cuttings of the ripening wood..... Weeds come among flowers as well as among cabbages and must be treated in the same manner. Sharp-toothed rakes frequently run over the soil among the plants, will both keep the surface light. and uproot the young weeds. It is well to have rakes of at least two different widths, as a thickly planted border will need a narrow one. The lance-headed hoe described and figured last month under "Kitchen Garden" is quite as useful in the flower garden, and saves a great deal of hand-weeding.

Greenhouse and Window Plants.

The last cold storm is generally over—at least in the latitude of New York—by June 10th, and the weather at that time may be regarded as settled warm. By that date whatever plants are to be taken from the greenhouse, may come out, and the house put in its summer dress.....With a little care it is easy to provide a set of plants of the *Gesneria* family that will keep the house a blaze of flowers. Gesnerias, Gloxinias, Tydæas, Achimenes, etc., are all brilliant. Some of the double Geraniums, and all of the Tricolor class are much better in-doors; these, with Fuchsias, and other summer-flowering plants, will make a well-shaded and well-ventilated greenhouse an attractive place.....Shading must now be increased, unless put on heavy at first.....Insects will be rather more active than in winter, and the same means must be taken to subdue them.....See last month's Notes.

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Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending May 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	237,100	254,000	1,570,000	51,000	198,000	573,000
26 d's *last* m'th	265,000	289,000	1,711,000	47,000	304,000	674,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	319,000	1,072,000	7,149,000	62,000	93,000	1,570,000
26 d's *last* m'th	334,000	1,265,000	2,307,000	53,000	257,000	896,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877..	237,100	254,000	1,570,000	54,000	198,000	573,000
26 days 1876..	294,000	1,136,000	1,334,000	83,000	221,000	901,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877	319,000	1,072,000	7,149,000	62,000	93,000	1,570,000
26 days 1876..	337,000	2,623,000	1,211,000	117,000	41,000	846,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
May 7, 1877..	761,686	468,809	193,046	174,375	347,881	291,654
Apr. 10, 1877..	1,782,901	1,035,654	240,423	320,331	606,639	311,032
Mar. 5, 1877..	2,730,641	1,711,095	288,895	513,826	822,625	335,208
Feb. 7, 1877..	3,083,819	2,302,264	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Exports from New York, Jan. 1, to May 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas* bush.
1877....	436.097	3.124 698	6,062,226	439,605	123,083	60,141	136,874
1876....	728,579	7,614,910	4,336,520	102,604	——	77,290	319,539

CURRENT WHOLESALE PRICES.

	Apr. 12.	May 12.
PRICE OF GOLD.	**105 7-8**	**107 1-4**
FLOUR—Super to Extra State	$6 25 @ 7 75	$7 50 @ 8 75
Super to Extra Southern	6 40 @ 9 75	7 75 @12 00
Extra Western	6 85 @11 00	7 85 @13 00
Extra Genesee	7 75 @ 8 75	8 75 @10 25
Superfine Western	6 25 @ 6 90	7 50 @ 8 00
RYE FLOUR	3 00 @ 5 25	5 75 @ 6 50
CORN-MEAL	2 65 @ 3 50	3 10 @ 3 95
WHEAT—All kinds of White.	1 60 @ 1 80	2 00 @ 2 35
All kinds of Red and Amber.	1 25 @ 1 80	1 50 @ 2 25
CORN—Yellow	57 @ 60	70 @ 71
Mixed	57 @ 60	68½@ 75
White	57 @ 60	67 @ 71
OATS—Western	42 @ 57	46 @ 65
State	52 @ 60	64 @ 72
RYE	85 @ 97	95 @ 1 15
BARLEY	57½@ 1 02½	60 @ 1 12½
BARLEY MALT	65 @ 1 25	65 @ 1 35
HAY—Bale, ℔ 100 lbs	65 @ 1 00	65 @ 1 00
STRAW, ℔ 100 lbs	50 @ 75	50 @ 80
COTTON—Middlings, ℔ lb	11⅜@ 11½	10⅞@ 11
HOPS—Crop of 1876, ℔ lb	8 @ 17	8 @ 20
" old, ℔ lb	4 @ 10	4 @ 10
FEATHERS—Live Geese, ℔ lb	42½@ 45	40 @ 45
SEED—Clover, ℔ lb	14 @ 15½	Nominal.
Timothy, ℔ bushel	1 85 @ 2 00	Nominal.
Flax, ℔ bushel	1 60 @ 1 75	1 55 @ 1 70
SUGAR—Refi'g & Grocery ℔ lb	7½@ 10¼	9¼@ 11⅜
MOLASSES, Cuba, ℔ gal. 50 test	— @ 42	52 @ —
New Orleans, new crop, ℔ gal	38 @ 55	45 @ 60
COFFEE—Rio (Gold)	16 @ 20	17 @ 21
TOBACCO, Kentucky, &c., ℔ lb.	5 @ 18	4½@ 18
Seed Leaf, ℔ lb	4½@ 50	4½@ 50
WOOL—Domestic Fleece, ℔ lb	27 @ 50	28 @ 50
Domestic, pulled, ℔ lb	18 @ 42	18 @ 38
California, spring clip	12 @ 28	13 @ 30
California fall clip	12 @ 23	10 @ 21
TALLOW, ℔ lb	7⅞@ 8⅛	8½@ 9
OIL-CAKE—℔ ton	33 00 @ —	37 00 @38 00
PORK—Mess, ℔ barrel	15 00 @15 10	15 50 @15 90
Extra Prime, ℔ barrel	11 50 @ —	12 00 @12 25
BEEF—Plain mess	10 00 @11 50	13 00 @13 50
LARD, in trcs. & bbls, ℔ 100 lb.	9 00 @10 25	8 75 @10 12½
BUTTER—State, ℔ lb	16 @ 32	10 @ 26
Western, poor to fancy, ℔ lb.	10 @ 30	9½@ 25
CHEESE	6½@ 15¼	5 @ 15
BEANS—℔ bushel	1 50 @ 3 00	1 75 @ 3 90
PEAS—Canada, in bond, ℔ bu.	— @ 1 10	1 15 @ 1 20
EGGS—Fresh, ℔ dozen	17 @ 18½	11½@ 14
POULTRY—Fowls & Chickens	10 @ 15	15 @ 20
Chickens, spring, ℔ pair	— @ —	85 @ 1 75
Turkeys—℔ lb	10 @ 18	14 @ 20
Geese, ℔ pair	1 25 @ 2 50	1 12½@ 2 50
Geese, ℔ lb	8 @ 12	9 @ 13
Ducks, ℔ pair	70 @ 1 25	70 @ 1 25
" ℔ lb	13 @ 18	14 @ 20
Roosters, ℔ lb	4 @ 8	7 @ 10
Capons, ℔ lb	18 @ 22	22 @ 26
DUCKS, Wild, ℔ pair	15 @ 75	— @ —
PIGEONS, wild, ℔ dozen	1 00 @ 1 75	1 87½@ 2 50
SQUABS, per dozen	3 50 @ 3 75	2 75 @ 3 25
PLOVER, ℔ doz	1 00 @ 1 25	2 00 @ 2 50
SNIPE, per doz	35 @ 1 25	75 @ 2 75
TURNIPS ℔ bbl	75 @ 1 00	50 @ 75
CABBAGES—℔ 100	5 00 @12 00	5 00 @12 00
ONIONS—℔ bbl	3 50 @ 5 00	4 00 @ 5 00
LETTUCE, ℔ bbl	1 75 @ 3 25	2 00 @ 4 00
CARROTS, ℔ bbl	— @ —	— @ 1 00
POTATOES—℔ bbl	2 75 @ 3 87½	1 50 @ 4 00
new,	8 00 @ 9 00	4 00 @ 7 50
SWEET POTATOES—℔ bbl	3 50 @ 5 00	4 00 @ 5 50
SPINACH, ℔ bbl	2 00 @ 3 00	25 @ 1 00
TOMATOES, new Bermuda, bx	1 00 @ 1 25	75 @ 1 00
BEETS, ℔ crate	2 00 @ 3 00	2 00 @ 2 50
RADISHES, ℔ 100 bunches	1 50 @ 3 00	50 @ 1 50
ASPARAGUS, ℔ doz. bunches.	62½@ 1 00	1 25 @ 3 00
STRING BEANS, ℔ crate	— @ —	1 00 @ 1 75
RHUBARB, ℔ 100 bunches	— @ —	1 50 @ 3 60
CUCUMBERS, ℔ bbl	— @ —	3 00 @ 6 00
BROOM-CORN	3½@ 8	3½@ 8
GREEN PEAS, ℔ crate	2 00 @ 4 00	75 @ 3 00
CRANBERRIES—℔ crate	50 @ 2 50	50 @ 1 75
APPLES—℔ barrel	1 50 @ 3 75	75 @ 3 50
STRAWBERRIES, ℔ quart	— @ —	15 @ 40
SQUASH, ℔ bbl	1 75 @ 3 00	1 50 @ 2 00
PEANUTS, domestic, ℔ bush.	85 @ 1 25	85 @ 1 25

Gold has been up to 107⅝, and down to 105½, closing May 12, at 107¼, as against 105⅞ on April 12; 104⅝ on March 12; 106 on Jan. 12; 107¼ on Dec. 12, 1876, and 112⅜ on the 13th of May, 1876....The month under review has been remarkable for the activity, partly speculative, in domestic produce, as affected by the foreign war news, reports, and rumors. The dealings in Breadstuffs and Provisions have been on a more liberal scale, and prices have been quoted much stronger, with, however, frequent and wide fluctuations in the more prominent instances. Flour and Wheat have been decidedly dearer, and early in the month, briskly inquired for, and much excited, though comparatively dull toward the close, with part of the improvement lost. The very latest operations, however, indicated reviving firmness, favored by the more encouraging tenor of the foreign market advices. Corn has been in extraordinarily lively request for prompt and forward delivery, the speculative temper have been dominant in this line. Sales have been to very heavy aggregates, on several days having exceeded 700,000 bushels per day, and on one day running over 825,000 bushels, the bulk of which amount was represented by options on the New York grades of Steamer Mixed, and No. 2. This option feature of the business in Corn now leads all others, and the dealings, in this form, each day, are the source of much excitement. In deference to the request of many members representing the grain trade interest of the Produce Exchange, it was announced on Thursday, May 10, that on and after Monday next, May 14, formal call of options in corn would be held at 11 o'clock in the forenoon of each business day. The operations at this call, it is believed, will afford a sufficiently precise indication of the position of the New York market, at an hour early enough to be of use and advantage to the business correspondents of the members at prominent points in the interior, especially at Chicago, where dealings are always commenced early in the forenoon of each day. Another call, in the same connection, to be held after the final adjournment of 'Change, at an hour to be specified, is also talked of, 3 o'clock P. M. being the hour seemingly in most favor. Oats have also been very brisk, and much higher in price under speculative action, based on the assumption of deficient supplies, but, toward the close, arrivals of Western product, by rail, were comparatively free, which circumstance discouraged buyers, and lead to a sharp break in values. Really prime State products, mixed and white, heavy as to weight, and up to the standard in color, have been scarce and held with a fair show of confidence. Rye has been carried up materially in price, by speculative manipulation—State, to arrive, up to $1.25, and Western, here, $1.15 @ $1.18, but for a week or two past have been extremely dull and yielding, leaving off at $1.10 bid, and $1.15 asked for State, and $1.05 asked, and 95c. bid for No. 2 Western. Barley has been in very moderate request for home use, the scarcity of prime new crop, and the advanced figures claimed by sellers, tending to impede operations. Further important amounts of Feed Barley, of about the standard of No. 3 Western, have been taken for export, mostly for the English markets, the latest at 60 @ 62c. ℔ bushel. The bulk of the stock now here is of this class. Export purchases, generally, have been checked by the very marked rise in values, yet the principal holders, at the close, seem firm in their views, anticipating even a higher range of quotations later on, calculating especially on the aid of the development of the war issues between Russia and Turkey....Cotton has been less active, closing lower....Tobacco and Wool have been selling to a fair extent, leaving off steadily at quotations... Hops have been moderately sought after, at about previous figures... Grass Seeds have been partially neglected, the season of activity being at an end, and prices quoted wholly nominal....A good demand has been reported for Rice and Hay; and a very brisk inquiry for Groceries, prices of Sugar, Molasses, and Coffee advancing notably. ....Ocean Freights have been more active and higher, but toward the close again depressed and unsettled....Grain rates by steam to Liverpool closed on the 12th of May at 5½*d.*, (having been during the month as low as 4*d.*, and as high as 8½ @ 9*d.*); to Glasgow at 4¾*d.*; to London at 4¼*d.*; to Liverpool, by sail, nominal; London, by sail, nominal, per bushel. Provisions by steam to Liverpool, 40*s.* @ 50*s.* per ton; Cotton by sail and steam at ¼*d.* @ 9/32*d.* ℔ lb. Grain, by sail, for Cork and orders, at 5*s.* 9*d.* @6*s.* per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Apr. 16	10,495	65	3,144	14,056	25,508
Apr. 23	11,927	75	3,127	20,986	29,495
Apr. 30	10,138	52	4,162	17,842	26,032
May 7	12,670	66	5,907	16,842	31,120
May 14	9,827	73	5,205	20,287	26,632
Total for 5 *Weeks*	55,057	331	21,545	90.013	138,787
do. *for prev.* 4 *Weeks*	10,078	256	6,309	34,900	82,841

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	13,764	66	4,309	18,062	27,757
do. do. *last Month*	10,019	66	1,577	21,225	20,711
do. do. *prev's Month*	8,582	112	831	18,185	17,550

Beeves.—The past month's business opened strong and active, with an advance in prices. This was due as much to the better quality of cattle as any other reason, and this is seen from the fact that in the first week of our report 300 head were over 1,400 lbs., and 500 were over 1,300 lbs. 725 head of these cattle went to Europe. This business is still extending, and some new firms have entered it, notwithstanding drawbacks which interfere with it, and which we pointed out at the beginning of the trade. These are, the effects of warm weather, uncertain length of voyages, the depression in the English market due to the arrival of several cargoes nearly together at unfavorable times, and the absolute necessity for immediate sale. There is also the double effect, tending all the same way, of higher prices here and lower rates there. Notwithstanding, the business is established, and though it may fluctuate, it is not likely to cease. Over 8,300 head went that way during the month. The market closed higher and strong, with few cattle lower than 10½c., and the great majority higher, being extra good. Extra cattle of 60 lbs. to the cwt. brought 12¼@12¾c.; the average of the market being higher than since 1875.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Apr. 16	9¼@12½c.	10¼@11½c.	10¾c.
Apr. 23	10 @12½c.	10½@11¼c.	10⅝c.
Apr. 30	9¾@12½c.	10¼@11¼c.	10¾c.
May 7	9½@12½c.	10 @11¼c.	10½c.
May 14	10 @12¾c.	10¾@12½c.	11¼c.

Cows.—The market has been in favor of sellers, with a healthy demand, and prices are somewhat better. Poor cows bring $50; fair, $60; fine, $65, and something extra to fancy, $70@$80; one which meets the exact wants of a critical buyer brings $90.

Calves.—The month's business in calves has been a real "slaughter of the innocents." Beginning badly, with many unsold and offered in vain at 3c. ℔ lb., the market progressed, or rather went back under very large receipts and the influence of warm weather. Dressed veals dragged slowly, and no more are wanted at any price. At the close it required pretty good calves to bring 5½c. ℔ lb., live weight, and 6½.@7c. was paid for selected choice veals; ordinary brought only 4@5½c. ℔ lb. It is a matter for regret that most of the calves sent to market were not kept at home and raised for beef.

Sheep are now coming in without their fleeces, and only sheared are quoted. Poor sold at 4¾@5¼c. ℔ lb., live weight; good for 5¼@6c., and prime brought at the close 6¼@6⅝c., which was ¼c. ℔ lb. advance on previous sales. Lambs brought 9@11c. ℔ lb., alive, for fair, and 12@13c. for choice. Some Virginia and North Carolina lambs have come to hand, selling for $5@$6 per head

Swine have been on the rise during the month; live closing at 5¾@6c. ℔ lb., and City dressed at 7@7½c. ℔ lb. Some Western dressed out of refrigerator cars sold at nearly the rates for city dressed.

Prices of Feed.

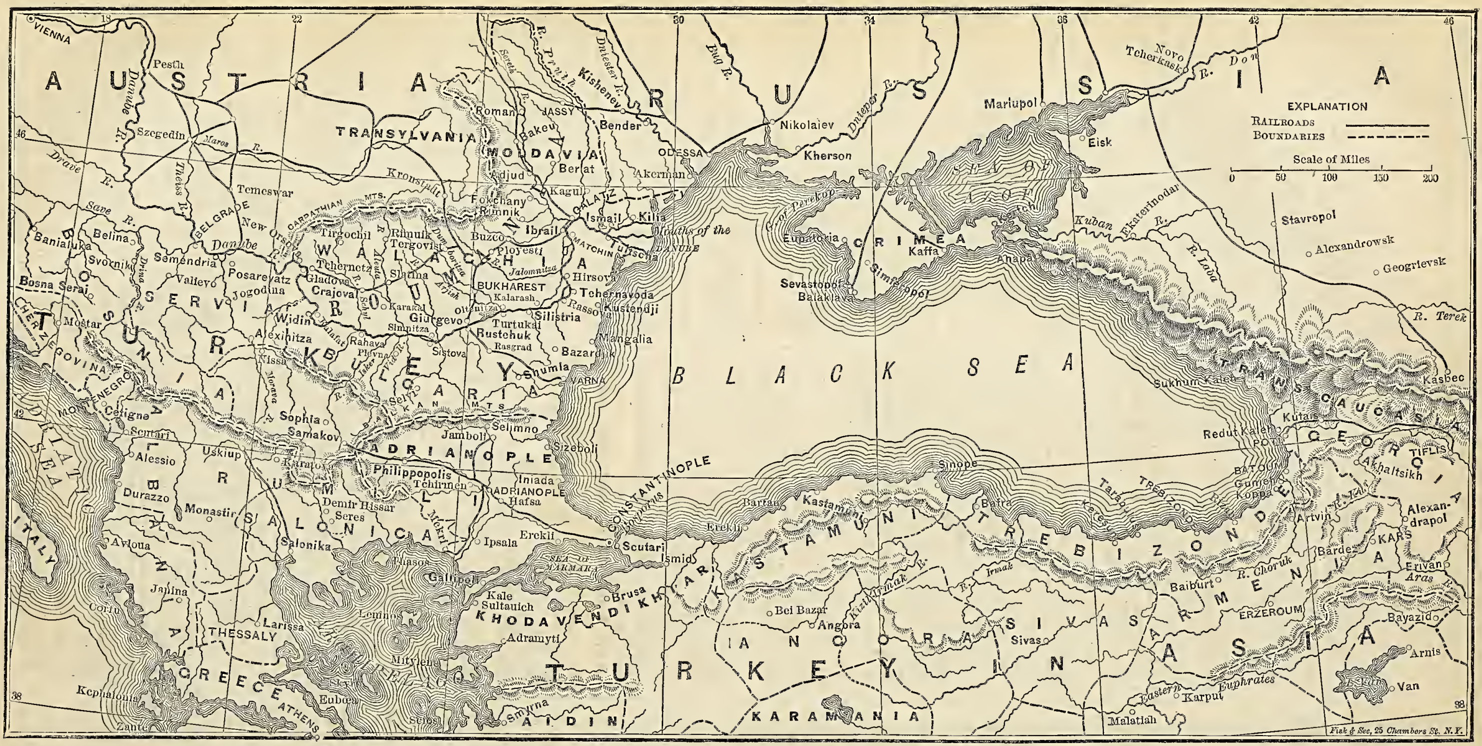
Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	41.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton..	$56.50
do. do. guaranteed, ℔ ton, cargo C	56.00
do do. rectified, per ton, 10 p. c..	66.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
" Potato do do do do	25.97
" Turnip do do do do	19.36
" Fine Bone, strictly pure........ ...per ton	40.00
" Dissolved Bone, 15 per cent........ do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.60
" " Dry g'd Fish Guano, ton 9 p. c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (80 per cent) per lb.	4 c.
Chloride of Potass, (muriate of potash, 80p.c.), lb	2½c.@ 3 c.
Nitrate of Soda, per lb.	4¼c.@ 4¾c.
Sulphate of Ammonia (25 per cent.), per lb....	5 c.@ 5½c.
Dried Blood or Dried Meat per unit of ammonia.	$3.00@ $ 4.00

Brown (Rye and Indian) Bread.—"J. R.," New Bedford, Mass., thinks that the recipe given in February last, p. 47, is objectionable on account of the soda it contains, and we are glad that she does, as it is the cause of her sending a recipe that has been "handed down" in her circle since the early part of the century. As to soda, we disapprove of its excessive or inconsiderate use as much as any one can, and think that it were better to banish it from the kitchen altogether than to use it as many do. But where it is used to neutralize an acid, the article is made lighter by the liberation of gas, and improved. Soda may be judiciously used with sour milk, buttermilk, or with molasses, which contains a considerable amount of free acid; hence it is allowable in the recipe referred to, though perhaps the quantity may be more than is needed. In New England the name Brown Bread is given—so far as we have observed—to rye and Indian bread exclusively, while in other States bread, made in whole or in part of Graham flour, is often called brown bread. The term, Boston brown-bread, often applied to rye and Indian elsewhere, is seldom heard in New England. Our correspondent says: "Take of Indian and rye meal one quart each, brown sugar an even cupful, and of salt a scant teaspoonful. Stir well together, while dry; then add a teacupful of home-made yeast and a quart of warm (*not hot*) water. Mix thoroughly and put into an iron or earthen pan, smooth the top with a wooden spoon wet in cold water. Put it in a warm place, to rise, until the top begins to crack, then bake in a moderate oven from three to four hours, or steam five hours, and then dry the crust in an oven a short time."

Potato Salad, writes "T," is a regular dish at the German restaurants, and Americans who become acquainted with it, are not slow to adopt it. We find it very acceptable at lunch, and in warm weather with a cold meat dinner all the family prefer it to hot potatoes in any form. There is no regular rule for making it; the needed articles are cold boiled potatoes, chives (or a small onion), parsley, salt, pepper, vinegar, and oil. Slice the potatoes thin; chop the chives (or onion) and parsley fine. Put a layer of sliced potatoes in a dish, sprinkle on chives, parsley, salt, and pepper, then pour over vinegar and oil enough to thoroughly moisten the whole, another layer of potatoes, and so on. It is better to make it an hour or two before serving, and carefully turn once or twice, or stir in such a manner as not to break the slices. As some of the family do not like oil, we mix the salad with vinegar only, and those who like oil, add it to their own portion at the table.



MAP OF THE SEAT OF WAR.—*Drawn and Engraved Specially for the American Agriculturist.*

The war now raging in Europe is of great interest to all the rest of the world, in its humanitarian and political aspects.—It is of special interest to American farmers, because the great supplies of wheat usually grown in the country west of and around the Black Sea, and supplied to Great Britain and Western Europe, must necessarily be largely diminished during the war, and these supplies must mainly come from America.

[To enable our readers to follow intelligently the leading movements of the contending armies, we have had the above map prepared. It is the most complete one we have yet seen, embracing the whole country involved, and being in clear, well printed form, it is worth preserving for continued references.]

The Russian armies are advancing upon Turkey in two distinct divisions, a thousand miles apart—one moving down through Roumania, west of the Black Sea, upon Turkey in Europe; the other down through the Caucasus east of the Black Sea upon Eastern Asia Minor, or Turkey in Asia.

RUSSIA.—The United States, including its Territories, covers 3,603,884 square miles. Russia in Europe, including her Finland and Poland territory, covering 2,088,884 square miles—about 4/7ths the size of the U. S. Russia in Asia covers 6,262,216 square miles. Total 8,351,094 square miles, or about 2⅓ times the area of the United States.—Population of Russia in Europe 73,563,118; of Russia in Asia 12,122,827. Total population 85,685,945, or about double that of the United States.

TURKEY.—Area in Europe, 140,000 square miles, equal to N. Y., N. J., Penn., and Ohio. Turkey in Asia, 760,000 square miles, or one-fifth of the United States.—POPULATION in Europe 8,500,000; in Asia 13,200,000. Total 21,700,000, or about half that of the United States. The various Dependencies of Turkey, as Egypt, Arabia, etc., have an area of some 1,300,000 square miles, and a population of 26,000,000.

The **Black Sea** covers an area of 180,000 square miles, extending 700 miles from east to west, and 400 miles from north to south. Its varying coast line is full 2,000 miles. (It is nearly six times as large as our largest inland lake, *Superior*, which covers 32,000 square miles, being 360 miles long, and 140 miles wide, with a coast line of 1,500.) The water of the Black Sea is brackish, but not so salt as that of the open ocean.

The **Danube River**, which flows through the western field of war, is 1,820 miles long. At Ulm it is 1,500 feet above the sea level, and at Vienna 500 feet, which it falls in the rest of its course to the Black Sea. (The Mississippi River is 2,200 miles from St. Paul to the Gulf of Mexico). The Danube makes a great bend northward in Roumania, and enters the Black Sea through several branches, like our Mississippi.—The country between the northward bend of the Danube and the Black Sea, between Silistria and Ismail on the map, is called the "**Dobrudja,**" so often referred to in the war news dispatches. It is a somewhat flat country, and fertile. The four strongly fortified cities of Varna, Shumla, Rustchuk, and Silistria, are termed the Turkish "Quadrilateral" of defense.

ROUMANIA, comprising Moldavia and Wallachia, on the northern side of the Danube, now occupied by the Western Division of the Russian Army, contains 46,708 square miles, (about the same as New York, 47,000 sq. miles, or Pennsylvania, 46,000 sq. miles). It is a very rich agricultural country, and until now has been a dependency of Turkey in Europe.

The following estimated Population of some of the principal Cities, within or near the seat of the war, will be interesting for constant reference. These cities will be found on the map:

IN EUROPE.	*Population.*
Adrianople	125,000
Bukharest	142,000
Constantinople	500,000
Galatz	80,000
Ismail	21,000
Jassy	90,000
Odessa	121,000
Philippolis	45,000
Rustchuck	30,000
Salonica	70,000
Shumla	20,000
Sevastopol	12,000
Silistria	20,000
Scutari	70,000
Varna	20,000
Widin	25,000
IN ASIA MINOR.	
Alexandropol	17,000
Bayazid	10,000
Brusa	103,000
Erzeroum	45,000
Poti	7,000
Sinope	10,000
Trebizonde	40,000
Batoum	3,000
Diarbekir	35,000

Ending June 30, 1877,
At 6 O'clock, P. M.

The Publishers have, since November last, offered a fine list of Premium Articles to those procuring subscribers to this Journal for 1877. The offer extends to the above date, when it will be positively withdrawn, as their contract with manufacturers of the Premium articles was only made for a definite period. (A reserve and exception is made, however, in favor of those residing at points too distant to be reached by this paper, and letters returned within two weeks. ☞ All such persons will be allowed 4 weeks *after receiving this paper*, to complete premiums in progress, and to make up *new* premium clubs, as many can do. Our numerous friends in Australia, New Zealand, South Africa, etc., can therefore continue gathering subscribers for a month after getting this June number, and then forward them in time to have the benefit of this year's premium offer. (Only those marked with a * can be sent by mail to Australia and New Zealand, post-paid, by the Publishers.)

Over 18,000 Persons

have secured these Premiums and in **499** cases of every **500**, with great satisfaction.

Many more have clubs partly made up. They should be promptly filled out **now**, as the Premium Offers only extend to the end of June.

10,000 New Clubs
Can be started and easily
made up during June.

There are many fine things in our Premium List, and you can get one or more of them **without money**, and with only a few minutes time. See part of them below.

Is not this Journal, with all its Illustrations, its variety of reading, its large size, and low price, well worth all its cost?

If it is, explain this to a few friends and neighbors, and offer to send on their names as subscribers. It will cost you but a little effort, *while for every three names or more*, at the full subscription rates, the Publishers will present you with a valuable article worth having, as named below.

Many persons collect five to twenty-five names a day, receive our Premiums, and sell them. But in all June, **YOU, READER,** *can easily* get three, five, ten, twenty, or more names, and receive a nice Premium, as follows:

☞ We will present to you, **free,** for sending

Only . . . . 3 Subscribers,

(at $1.60 each, a year,)

A **Pocket Tool Holder**; or **Apple Parer,** or **Corer** and **Slicer**; or **Cherry Stoner**; or **Crandall's Acrobats**; or Payson's **Indelible Ink** with **Pen***; or Moore's **Floral Set**; or Self-Adjusting Gold-Plated **Watch Key***, etc., (each worth $1 to $1.50).

For only 4 Subscribers,

Fine **Pocket Knife***; or **Bracket Saw***; or Patent Revolving **Pencil**; or Patent Magic Bell Head **Pencil***; or Houchin's Pocket **Cook Stove**; or Abbott's Pocket **Microscope***; or Bay State Apple **Paring and Slicing Machine,** etc.

For only 5 Subscribers,

Lady's Magic Charm **Pencil***; or Crandall's **Building Blocks.**

For only 7 Subscribers,

Excelsior Pocket **Microscope**; or **Child's** Silver-plated **Cup**; or **Gold Pen,** Telescope Case*; or $2.75 **Pocket Knife***; or $2.75 worth of **Garden Seeds** and **Bulbs.***

For only 8 Subscribers,

That Splendid **Multum in Parvo Pocket Knife*** (a pocket lot of tools weighing only 2 ounces); or first-rate **Gold Pen***; or **Boudoir Clock,** etc.

For only 9 Subscribers,

Fine **Carver** and **Fork**; or French Cook's **Knife, Fork,** and **Steel**; or Doll's **Cottage Chamber Set**; or Child's Self-Operating **Swing.**

For only 12 Subscribers,

Child's Silver-plated **Knife, Fork,** and **Spoon**; or Cahoon's Broad-cast **Seed-Sower**; or **Boy's Wagon.**

For Only 15 Subscribers,

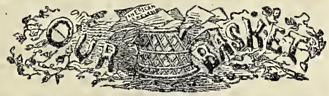
One doz. silver-plated **Teaspoons**; or elegant **Telescopic Gold Pen and Pencil.**

For Only 18 Subscribers,

A Worcester's **Great Dictionary**; or Elegant Silver-plated **Cake Basket**; or one Dozen Extra Plated **Tablespoons** or **Forks**; or Universal **Force Pump**; or,

A $10 Library for the Farmer's Home. Your choice from our list; and for an increased number of subscribers your library can be proportionately increased. (See Premium List. Also 3d Cover Page.)

In addition to the articles enumerated above, many others are offered in our Premium List, as Elegant Silver Plated Tea Set; Ice Pitcher; Breech Loading Pocket Rifle; Double-barrelled Gun; Watches; Piano, etc. Any of these valuable and useful articles, can readily be obtained by any one with a little well directed effort, during this pleasant month of **June.** Send and get, free (if you have it not already), our Illustrated Premium List.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss.. **Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (50 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time at the club rates, if new members begin at same date as original club.

Cheaper Clothing.—The price of Clothing has fallen, in common with most other necessaries of life, —much more than the price of farm products. Those having garments to buy, will be interested in the advertisement of Messrs. Foote & Richardson (page 230), who have long done a reputable and prosperous business on Fulton street, and have now come over to Broadway, where they have enlarged facilities. They state what is true in every other business, as well as in theirs, that only by fair and square dealing, consulting the interest of one's customers quite as much as his own immediate profit, can one hope and expect to build up and maintain, through a series of years, a business that shall be both honorable, and in the end the most profitable.

Equalizing Postage—New York and New Zealand.—To send this paper through the P. O. to a regular subscriber in New York City, even if but a square or two away, the publishers must pre-pay 24 cents a year. They send it pre-paid to many hundreds of regular subscribers in New Zealand, and to a multitude in Australia, on the other side of the earth, at precisely the same postage rate, 24 cents a year!—Half-ounce letters now go to *nearly* every country in Europe, at the uniform cost of 5 cents, and to many other distant regions, as Japan, Australia, etc.

The Colorado Beetle and Paris Green.—The potato beetle is very active, and it has been necessary to use Paris green as soon as the potatoes have appeared above the ground. Many persons who allowed their potatoes to be destroyed last year, are anxious to save them this season, and the inquiries for *pure* Paris green are very frequent. We have been at some trouble to learn all about the sources of supply of this article. Devoe & Co., of Fulton and William streets, New York, manufacture a pure article, and in cases where local dealers cannot supply it, are willing to supply it direct to consumers. A very convenient manner of procuring it is in 14-℔. or larger cans, which can be sent cheaply and safely by express, and if too large for one can be divided amongst neighbors. *The utmost caution must be observed in using this article, as it is a deadly poison*, whether taken by the mouth or in a wound.

Salt for Stock.—"G." It is not always safe to keep a large quantity of salt where stock can get free access to it. Sometimes an animal will take too much of it, in which case it is an active irritant poison.

German Millet.—"A. C.," East Cleveland, Ohio. German millet is a form of the Hungarian grass. It is a good crop to raise for fodder on good soil, and may be sown late this month or in July. Two pecks of seed should be sown per acre.

As Usual, the Reader will find a full display by *good* parties, of a great variety of plants, implements, machinery, and many other things, as set forth on the second cover and some other pages of this Journal. One can there learn, without going from his fire-side, concerning a multitude of articles and enterprises. Those in charge of that department are instructed to "admit no quacks or quackery, and only those who have the *ability* and the *intention* to do what they promise to do in their advertisements." Our readers will find it profitable to take a stroll all through this department, not only to find the best places to get what they want, but also to gather useful business hints by seeing what others are doing, what they say, and how they say it. It is always well when corresponding with these men in ordering, inquiring, sending for circulars, etc., to inform them that you made their acquaintance through the pages of the *American Agriculturist*; it will do no harm, and may be of double advantage.

Humbugs—The War.—The usual humbug article is crowded out this month by the war map, which seemed to us to be an important matter for many of our readers who have not at hand full charts of the country which is now the scene of a great struggle that may run into one of the greatest wars of this century. It may come to a speedy termination, but may yet involve the greater portion of Europe. Our Map, with the accompanying notes, will be found quite instructive. It will furnish an interesting geographical lesson for the children in every family, and we suggest that they be questioned both on the map and the notes, so as to fix the figures, etc., in their memories.

Sprouting Seed for Late Planting.—"W.," Fayette Co., Ill. When seed intended for late planting is sprouted, it is necessary to plant it as soon as the germ has started, and with great care. If the sprout dries, or is broken off, the seed will be worthless.

Cow Leaking Milk.—"C. L. B.," Kent Co., R. I. The cause of a cow leaking milk, is a looseness of the muscular ring, which closes the orifice of the teat. There is no cure for this. The leaking may be prevented, to some extent, if not altogether, by milking the cow three times a day. It has been recommended to apply to the ends of the teats, after milking, a drop of photographer's collodion.

"A Fairbanks" is a convenient synonym for a weighing machine or scales, as nearly perfect of its kind as it is possible to procure, whether it occupies a place on the druggist's counter, or is at a freight depot, and large enough to weigh a loaded train. The firm of Fairbanks & Co. have a world-wide reputation, and we are glad to learn that, since the Centennial, their already important foreign trade has increased in a most gratifying manner. Every well appointed farm should have the means of weighing every thing that is sold from it or bought for it, and this can be supplied by Fairbanks & Co.

North Carolina ahead of New Jersey.—Those who do not know what improvement has taken place in the past few years, regard the Southern States as much behind others in agricultural progress. So far from this being the case, Georgia has a Department of Agriculture, that for real usefulness to the farmers of the State, is superior to any other we know of. Later, North Carolina has waked up, and an Experiment Station has just been organized, and placed in charge of Prof. A. R. Ledoux, who will at once exercise a control over the fertilizer trade similar to that which exists in Connecticut. Last winter the Board of Agriculture of New Jersey, applied to the Legislature of that State for a small appropriation to start an Experiment Station. The Legislature, composed largely of lawyers, laughed down and turned the affair into ridicule. The legislators of North Carolina, in this respect, are more wide-awake to the interests of the farmers than those of New Jersey.

Small Fruit Culture in N. J.—There is no doubt that the growing of strawberries and other small fruits for market, began in those portions of New Jersey opposite to New York. The business, now so important and extended, had a very small beginning; at first the growers took their own fruit to the city in small baskets, strung on poles, and hawked it about the streets. At the Annual Meeting of the N. J. State Horticultural Society, Mr. C. W. Idell called attention to the fact that but little is known of the early history of this culture, and gave a number of interesting items which he had gathered in conversation with some of the "oldest inhabitants" of Bergen Co. These gave the Society a desire to know more, and a committee was appointed to gather statistics and materials for a history of small fruit culture in the State. We hope that all who have any facts concerning the introduction of the early varieties of these fruits, or any other points in the history of the culture, will place themselves in correspondence with C. W. Idell, 227 Washington St., N. Y.

The American Pomological Society will hold its 16th biennial session at Baltimore, Md., on Sept. 12th next, and continue for three days. It is none too early for distant members to so arrange their plans as to be present at this, which promises to be a most interesting gathering. We learn from friends in Baltimore that preparations for the meeting are already going forward. The Maryland Horticultural Society, at whose invitation the Society meets there, will hold their Annual Exhibition at the same time, and hope to out-do themselves. Col. Wilder, whose health has been a cause of anxiety, now writes cheerfully of his improved condition, and hopes to be in the President's chair, a hope in which all pomologists will join.

Autumn Fairs.—Nebraska, and Washington Co., R. I.—the far East and the far West, set an example that other States and Counties should follow. They have decided when their fairs are to be held, and *give us timely notice.* We hope that secretaries of State and other Societies will favor us with early notice of the holding of their fairs. We would suggest to the County Societies the propriety of naming the *State* in their circulars. "Washington Co." or "Franklin Co.," are not especially definite as to locality.

Fertilizing value of Apple Pomace.—"C. G. S.," Dauphin Co., Pa. Apple pomace has very little value as a fertilizer. The best manner of using it is to feed it to cows, swine, and horses, all of which will readily eat it, either when fresh, or preserved in barrels or even in a compact heap. It will remain fit for use for several months, and when fed in small quantities, will be a healthful addition to the ordinary feed. If used for manure, it should be composted with lime, when it will be worth as much as so much swamp muck.

Poland-China Record.—We are glad to notice that a Record for pure bred Poland-China Swine is proposed, and hope it will be carried into execution. We understand that Mr. Carl Freigan, of Washington, Fayette Co., Ohio, proposes to undertake the work. Under the system proposed by him, of recording anything that may be sent in, doubtless much mischief may result. This work should be under the supervision of an association of breeders, who would be interested in preserving the purity of the breed, and not be controlled by one individual, with whom profit may be the chief object. This popular and valuable breed of swine should not be exposed to the possible injury that might result from the recording, and endorsement, of ill bred animals, as a hitherto good reputation might be seriously endangered.

New White Hydrangea "Thomas Hogg."—In October last, we gave some account of this as a new addition to our collections, of great promise, and gave an engraving which, being much reduced in size, failed to give a proper idea of the plant. Recently, through the attention of Mr. John Cadness, of Flushing, L. I., the florist into whose hands the plant fortunately fell, we have been able to see a fair specimen. A stem 15 inches high is surmounted by a broad cluster which is but a trifle short of a foot across; the individual florets are from two to two and a half inches across. Like the common Hydrangeas the flowers of this are at first greenish, but at length, when fully developed, become of a clear full white. This is manifestly one of the finest plants of late years, and Mr. Hogg and Mr. Cadness, the one as the discoverer, and the other as the disseminator, deserve the thanks and congratulations of all lovers of fine plants.

To prevent Calves from Sucking.—"C. C. P.," Galveston, Texas. In the *American Agriculturist* of November, 1876, a description and illustration were given of a perforated bit to be worn by weaning calves, for the purpose of preventing them from sucking. Very full directions are there given so that the bit may be made by any blacksmith.

Gapes in Chickens.—"O. K.," Hart Co., Ky. To prevent gapes in chickens, it is only necessary to have each year fresh ground upon which fowls have not been previously kept. This may be done, either by spading old ground deeply each year, or providing a different locality for the poultry yard.

Carting Nightsoil.—"Subscriber," Pemberton, N. J. It would not pay to cart nightsoil 15 miles if it were mixed with several times its bulk of coarse coal ashes. For the cost of cartage, (say $3) 100 lbs. of guano could be bought, which would be worth as much as 1000 lbs. of ordinary wet night soil, free from ashes.

How to Treat a Biting Horse.—"J. J. C.," Hartford, Wis. If the horse is dangerous use a muzzle; if not so bad as that, punish the animal at each attempt to bite by a smart blow on the nose with a switch or a slap with the open hand.

Questions relating to Poultry.—"M. J. McC.," Hartford, Ct. The thickened scales on the legs of poultry are caused by a mite, similar to the scab-mite of the sheep, which burrows beneath the skin. The remedy is to apply to the legs of the fowls a mixture of one ounce of lard, one teaspoonful of kerosene oil, and one teaspoonful of sulphur, well mixed and rubbed together. Rub this on the affected legs every night, until a cure is effected. Leg-weakness may be prevented or cured by giving in the feed a teaspoonful of cayenne pepper and one of sulphate of iron, (copperas), for every dozen fowls, once in two days, and continued for a week. Wheat is perhaps the best food for poultry as a steady diet. Too much corn is not good.

Weight of Pigs.—The Secretary of Lancaster Co., (Pa.) Agricultural Society, sends the following account of eight pigs raised by Levi W. Groff, of Lancaster Co., being the first litter of a young sow; they were dropped June 16th, '76. On Nov. 27th, three of the smallest of the lot, then 5 months and 10 days old, were killed, the dressed weight of each respectively was 139, 151 and 159 lbs. On Jan. 2d, '77, the remaining five pigs, then 6 months and 16 days old, were killed, the dressed weight was respectively 201, 214, 228, 229 and 231 lbs. Total net weight of last five killed being 1,103 lbs., an average of 220$^{3}/_{5}$ lbs. net weight each. The average age of the lot was 182½ days. Average net weight, 194 lbs.

Wheat Bran as a Fertilizer.—"F. M. N.," Moscow, N. Y. Wheat bran contains considerable fertilizing constituents, but yet it would not be an economical fertilizer. Peruvian guano at 3 cents a pound, bone and meat dust, or a mixture of superphosphate of lime and fish scrap, would, either of them, be much cheaper and more rapidly effective. The best and most profitable manner of utilizing wheat bran would be to feed it to pigs, or other animals, and save their manure.

The Effects of the European War upon American Agriculture.—The first effects of the war in Europe upon the produce market in this country may easily tend to mislead. The sharp rise in prices which occurred, was chiefly speculative and rapidly lost itself in a sudden reaction—leaving, however, a permanent though not very large advance. The effects of the war upon the produce business, have been largely discounted, and preparations have been made to meet it for some time back. Should the war be prolonged, it is not probable that we shall see any sudden greatly increased demand for provisions or grain, but such a steady drain towards Europe as will keep the markets at least in a satisfactory condition. Everywhere except in the Cotton States a healthy business will probably be maintained; but there the demand for cotton may fall off and prices subside somewhat. The very plain interest of farmers everywhere will be to grow as much of food crops as possible. In the South this will help to mitigate the possible loss of a market for some cotton and keep the price of a reduced crop to a higher average. In the East, North, and West, it will give farmers plenty of salable produce, which if it does not bring high prices, will at least secure satisfactory profits.

Shropshire Sheep.—"H. M. G.," Peconic, L. I. The best flock of Shropshires in America, is that of H. M. Coehrane, of the Province of Quebec, Canada. These are very valuable sheep, and are rather strangely neglected by our breeders. They are intermediate, both in wool and flesh, between the Cotswold and Southdown.

Pettengill's Newspaper Directory and Advertiser's Hand-Book.—The well known advertising firm of Messrs. S. M. Pettengill & Co. have just issued their "Advertiser's Hand-Book" for 1877. This is a complete and thorough list of all the newspapers and other periodicals published in the United States and British America. It contains also a list of newspapers *by counties*, for the special convenience of such advertisers as desire to cover certain portions of any of the States. The work is in every way creditable to the enterprising firm who issue it. As a Record, with description of the entire press of the country, it is interesting and valuable to any one. Octavo, 344 pages, bound in cloth. Price $1.00—by mail.

Questions Concerning Butter.—"T. A. G.," Livermore, Colorado. Barrels in which butter is packed, should be perfectly clean and free from any odor or taint, otherwise the butter will absorb it. An underground cellar, or cave, would be an excellent place for the storage of butter, provided it was well ventilated and free from bad odors. Ordinary soft-finish muslin may be used to pack butter in, after it has been thoroughly washed and then soaked in clean brine. Common barrel salt, if it is pure, may be used for dairy purposes, but it should be previously crushed fine, by rolling it with a large pastry roller, or pounding it with a mallet. It is best to use pure salt, such as the Ashton salt, or Onondaga factory filled. For making brine for packing butter in barrels, good ordinary salt will do, if the brine is boiled, and skimmed, and strained.

Profit in Poultry.—"D.H.M." Lancaster, Pa. We do not think that one half of those persons who keep poultry as a special business make ends meet, unless they sell eggs or fowls at fancy prices. Every one can not do this. Those only succeed who have more than usual tact, patience, perserverance, and aptness to learn, if they have not already had experience on a farm. It is not advisable for any person to embark in the business largely at first, but it would be wise to begin in a small way and let it grow by success.

Feeding a Brood Mare.—"K. S.," Lake Park, Minn. It is no injury to a mare with foal to be fed with a moderate quantity of grain, the quantity depending upon her usual rations, if the grain is good and sound, and is not solely corn. Corn and oats will do very well, but oats alone is the best food along with hay. On good pasture, when not working, the mare needs no grain. To starve the mare is bad for the colt.

Strawberries.—Mr. E. W. Durand, of Irvington, N. J., a celebrated grower of strawberries, invites all interested in the culture of that fruit to visit his place about the middle of June, to examine his large collection of varieties, mostly seedlings of his own raising.

The Department of Agriculture.—Many journals and individuals, assuming that some one is to be appointed Commissioner of Agriculture in place of the venerable Mr. Watts, are busying themselves with nominating his successor. We have been asked to advocate the appointment of no less than six different persons, and several agricultural journals have made their nominations—some of which are eminently unfit to be made. We are not especially enthusiastic in the matter, for so long as the Department is kept upon its present footing, it really does not make so very much difference as to who is at its head. The insignificant salary, and the limited appropriations with which to work. are not very tempting to a competent man, and we doubt if we should be doing a friendly act to urge the appointment of any one to a place where his opportunities for usefulness are restricted, and where, to eke out a livelihood, he has to quarter his family in the garret of the Department Building, and put its members and servants on the pay-roll. So long as members of Congress look upon the Department as a means of supplying their constituents with garden seeds, and the Commissioner and his subordinates have to lobby for the yearly appropriation and to keep their present meagre salaries from being cut down; we do not consider the position of Commissioner a desirable one. It is true that almost any one would do more with his meagre means than any former Commissioner has yet done, and several of those whose names have been mentioned would be a great improvement upon the present incumbent, though even he is vastly better than some who are named. Still we look for a reform that goes much deeper than a mere change of Commissioners. Let Congress appoint a commission composed of representative agriculturists from every part of the country. Let these consider, 1st. Can the general government do any thing for the advancement of agriculture? 2d. What can it do? 3d. What will it cost to do it? Lastly. Who is the man to direct it? In this way the Department could be put on a proper footing: then give it all the money it can usefully employ, and if at the end of five years no results appear, stop appropriations and shut up shop. Were this done, we should here no more calls for a Grasshopper Commission; no more meetings to get some one appointed Commissioner of Forestry; no more millions of dollars running hopelessly to waste by "hog-cholera." and perhaps we should hear no more feeding of pigs and poultry on Department seeds.

Basket Items continued on page 233.

An Exhibition of Dogs in New York.

One of the most popular of the exhibitions that have occurred in many years, was recently given in New York City. This was what is known among dog-fanciers and breeders as a "bench show" of dogs. It was given under the auspices of the Westminster Kennel Club, of New York City, and turned out to be very successful. Many thousand persons visited the show, and the extensive building, the Hippodrome, formerly occupied by Barnum's Menagerie, was crowded for the three days of the exhibition. Heretofore dog-shows have been unknown in this country, at least to any noteworthy extent, but in England they are a conspicuous feature of agricultural shows, and many very extensive exhibitions are devoted exclusively to these animals. In that country, dogs are carefully bred and well kept, and many farmers are as enthusiastic dog-fanciers and breeders as any sportsmen. Consequently, there are very few complaints of trespassing and depredations upon flocks, although as many sheep are kept in that small island as in our own extensive territory, which is many times as large. As "every dog will have his day," it is to be hoped that the American dog may have his, and this animal, useful or desirable for his virtues, may, by proper care and higher consideration, be freed from his vices, consequent upon his ignorance and poor care, and be enabled to hold the place in creation for which he was undoubtedly intended. The dog deserves a better fate than he generally meets, and if well bred, well kept, and well trained, may be made a useful and respectable animal. The popularity which the bench show has met, proves the consideration in which he is held, and will undoubtedly result not only in a repetition of the show in the City of New York, but will make similar shows popular elsewhere, and tend to elevate him in public opinion. Heretofore much of the had reputation in which dogs, especially sporting and hunting dogs, have been held, has been owing to the inconsiderate and selfish conduct of ignorant and irresponsible hunters (who are neither sportsmen nor gentlemen), and who have no idea of, nor care for, the rights of the owners of the ground over which they trespass in pursuit of game, or of the fields which the dogs scour over and the flocks which they are permitted or encouraged to chase and worry. This must all be changed, if sportsmen desire to have the sympathy of the farmers and the privilege of hunting over their grounds.

It is that a better understanding between farmers and sportsmen may be brought about, that we have noticed this exhibition, and give portraits of some of the prize dogs on page 201. The dogs represented were selected as excellent types of their different races, although not all of them were prize-winners. Prizes are given at these shows for beauty, not for usefulness, as the true qualities of the hunting dog do not lie in color or form, but in keenness of scent, sagacity, and docility. The setter and the pointer excel in these qualities, and the two setters, Nellie and Flora, whose portraits are given, are known to us as having more than an ordinary endowment of these canine virtues. Nellie, 3 years old, is owned by Milo Seagars, Bloomingburg, Sullivan county, N. Y., a noted fancier and breeder of dogs. Flora is the property of W. C. Waters, No. 1 John street, New York.

The pointer, Daisy, which took the first prize, is owned by Dr. A. R. Strachan, of the City of New York. The Chesapeake dog is a native race of Spaniel, and is used in duck hunting, so common in that locality. This breed is celebrated for its endurance and vigor, taking to the water in pursuit of game amidst ice and snow, and never flinching from work or exposure. This devotion to the wishes of its master is one of the most conspicuous canine virtues. This dog is named Trip, owned by C. H. Tilghman, of Easton, Md., and took first prize.

The shepherd's dog is the true farm dog, and no breed excels this in intelligence. To one who observes him handling a flock of sheep, he seems to possess reasoning powers; in fact, one experienced in his ways, can scarcely doubt that he does reason. The fine specimen shown is Tom Ridley, first-prize dog, owned by Mr. F. Bronson, of Wall street, New York. The pair of beagles shown are the property of Jesse Sherwood, of Edina, Mo. This class of dogs are generally tri-colored—black, tan, and white—and are used for hunting rabbits or foxes. They are a very handsome dog, and hunt in packs or pairs. The magnificent mastiff, of whose vigilance, bravery, tenacity, and patience—and at the same time, gentleness when off duty—so many stories have been told, is well represented in the specimen whose portrait is given. This is Vandal, owned by an English gentleman, from Liverpool. —We have no space to further describe the incidents of this bench show.

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The Prices of Nursery and Greenhouse Products Abroad and at Home.

BY PETER HENDERSON.

While the price of labor is from one-third to one-half more in this country than in Europe, nearly all the products of the nursery, greenhouse, or garden, are sold lower here than there,—not merely lower, but in a majority of cases at less than half the price. In nursery stock, I have the authority of Messrs. Ellwanger & Barry, of Rochester, N. Y., for stating that, in many leading articles in fruit trees, the differences in prices in favor of this country are as follows: In England, "Standard" Apple-trees are quoted at $18 per 100; the same quality are sold here at $12 per 100. Dwarf Pear-trees there sell at $35 per 100; here at $15 per 100. Standard Pear, Plum and Cherry-trees average in England $18 per 100; here $15 per 100. Apricots and Nectarines are sold for about the same price here and in England, but Peach-trees, which are sold here at an average of $70 per 1000, are there sold at $150 per 1000. The general assortment of ornamental trees and shrubs show a corresponding average in favor of lower prices here. In greenhouse or bedding plants, the difference in favor of our lower rates here is even greater, both at wholesale and retail. Roses, for example, which are sold lower in Europe than almost anything else, can rarely be purchased at less than $15 per 100; here, the same quality, averages $12 per 100. Carnations, or Pinks, which are quoted in England as specially low at $20 per 100, are sold here at $12 per 100. Ferns sold here at $8 per 100, are offered at $12 there; Tuberoses and Gladioluses that are sold here at $4, are quoted there at least double these rates, while, to take the average of bedding or greenhouse plants, that may average here $10 per 100 to the trade, are offered to us by the wholesale English houses as specially low, at $12 per 100.

Owing to the unusually dry weather of last summer, nearly all our stock Fuchsias were destroyed, so that we had to import from London; the price paid was $25 per 100, the very same quality that we sell at $12 per 100. In prices at retail, particularly for new plants, the prices paid in Europe are fully four times more than what we charge here. For example, a new rose, when first offered, is sold in London at £1. 1s., the plant, about $6; here, the first sales of the same are at from $2 to $3 each. New Fuchsias or Geraniums are rarely sold in London at less than $3 each; here we think we are getting well paid if we get one-fourth of that sum. In addition to the greater price paid for the article itself, they invariably saddle us with the expense of boxes and packing, often no small item, which here is rarely charged by the florists. If we add to these, our 30 per cent. duty, which our government in its wisdom exacts for these perishable commodities, it may well be wondered that Europe can ever sell to us at all, particularly when it is known that at least one half of the imported plants are lost by injury sustained in transit. The question arises, how can our nurserymen and florists sell so much lower, and make the business pay—for that they do make it pay quite as well as European growers do, there is but little doubt. The answer to this is, the known fact that the high cost of labor, has long ago forced us to use our ingenuity in simplifying our work. What we do with the plow, the English gardener still thinks it necessary to do with the spade. What we do with our horse or hand cultivator, he still does with the hoe, and often a very primitive sort of hoe at that. Where we use stakes and labels that are made by machinery, they, in many cases, yet make them by hand, when a single one, actually, costs as much in labor as do a hundred when made by machinery. When it comes to the manual operations, necessary in the propagating and growing of greenhouse plants, the same waste of labor is apparent. Our average propagator will take off, make, and set in bench, 1,000 cuttings per day; at the rate I saw the propagators of two of the leading establishments in London working, when there a few years ago, I doubt if the average was 200 a day, and when we tell them that some of our crack workmen can place 10,000 rooted cuttings in pots in 10 hours, they honestly think it false, for probably not more than one-third of that number has ever been done in the same time there. I do not wish to be understood that the English gardener can not move as rapidly as the American can, but custom there clogs his hands with unnecessary work, to accomplish the object desired. The other day a man of 40 years of age presented himself to me, with credentials from a long established Edinburgh firm, stating him to be an experienced propagator and cultivator of plants. To test his capabilities, I handed him a lot of rose cuttings to prepare, every one of which he cut at an eye or joint, in the approved orthodox style of a quarter of a century ago; all propagators of experience here have long known, that this is not only a great waste of material, but a still greater waste of time, and we never do it unless in particular cases that very rarely occur. I might mention scores of similar operations which are performed abroad in a manner which seem to us as primitive as this.

Those who have studied the subject, tell us that from the specimens of the "stone period," at the Smithsonian Institution at Washington, there is reason to believe that it took some thousands of years for our "rude forefathers" to discover that the handles could be better fastened to their hammers of stone, by drilling a hole through them, than by lashing them to the handles with thongs; and it is a matter of not very ancient history, that in parts of the South of Ireland the plow was attached to the horses' tails, and that a great row was the consequence when some meddling innovator suggested a change. It appears that mankind, in all ages, is naturally conservative, and it takes years, sometimes centuries, to get out of old ruts. If, while paying for labor one-third more, we can sell our garden products here nearly one-half lower than in Europe, the conclusion is inevitable, that we have learned how to make our labor more effective than they do.

The adage, that "A prophet is not without honor, save in his own country," is true in this matter as in many others; for we find that most Americans having horticultural tastes, when visiting Europe, buy largely there, their plants costing them, when duties are added, three times as much for half dead trees or plants, as they would pay at home for healthy ones. It is often the case, especially with fruits, that the varieties purchased are utterly useless for our climate. For example, the Jargonelle Pear, Ribston Pippin Apple, and Keen's Seedling Strawberry, still hold a first place in the English gardens, while experience has shown them to be worthless here. So with many ornamental trees; beautiful as are the varieties of English Holly and Rhododendrons, hundreds of Americans have poured down anathemas on the heads of European nurserymen for selling them plants as "hardy," that the frosts of our Northern States or the hot sun of the South, utterly destroyed the first season.

Ogden Farm Papers.—No. 88.

BY GEORGE E. WARING, JR.

The observation has been made that I have shown, in selecting material for these papers, an undue partiality for the Jersey race of cattle, while Short-horns, Ayrshires, Dutch, etc., are equally entitled to consideration and equally important in American agriculture. All this is quite true, but the criticism, so far as it is a fair one, would apply equally to pretty nearly the whole range of topics that I have considered during the past eight years. If any justification of my course is necessary, it is found in the title and in the first number of this series of papers. Believing that the most valuable thing that a farmer can tell to his brother farmers is that which he has learned in connection with his own business experience, and that any single farm, carefully considered, offers enough for any writer's general theme, I adopted at the outset the plan of confining myself almost exclusively to that which Ogden Farm should have to teach.

There has never been at Ogden Farm a Short-horn cow, nor an Ayrshire, nor a Dutch one. We set out at the beginning of our operation with a herd of Jerseys, and our experience has been confined exclusively to their breeding and management, and to the manufacture of butter from their milk. Everything else in our work has been incidental to the prosecution of this one industry, which has been so interwoven with my text, and has so fully occupied my practical contemplation, that my ability to write about cattle at all has been closely confined to the Jerseys. For nine years past, and since its organization, I have been the pedigree-keeper of the American Jersey Cattle Club. In short, I have been strictly a *specialist*, and in writing these papers, I have always acted on the theory—which I believe to be a sound one—that the most instructive writing is done by specialists, and that their work is valuably chiefly when they confine themselves strictly to their specialties.

The Short-horn interest is a far more important one than the Jersey interest. The amount of capital invested in thorough-breds of this race would buy up all the Jersey cattle in America ten times over. Especially in view of the rapidly growing business of exporting heavy American beef to England—an industry which promises to become one of the leading outlets for the products of American agriculture; the Short-horn interest comes still more to the front as the most important connected with the breeding of live stock. The Ayrshires are good cows, wonderfully good, so are the Dutch, and the milk and cheese interests of the country are so great that the importance of improving these breeds can hardly be overestimated. Short-horns, Ayrshires and Dutch cattle have very able advocates; men who are thoroughly well qualified to set forth their good merits. I am sure that the managers of the *American Agriculturist* would be only too glad to receive well-written articles giving practical information as to the breeding and management of these different races. Were I to attempt, as has been suggested, to write about them in these papers, I should enter a field separated from Ogden Farm by a very long lane, and should show in the first dozen lines a very decided unfitness for the task. Silence concerning these breeds must be assigned solely to the above considerations. Repeated reference to the Jerseys must be equally ascribed to the fact that my prominent interest and constant observation and investigation are applied to this breed.

Incidental to the business of farming, I have undertaken to give to the readers of the *American Agriculturist* a clear understanding of what my business has developed and suggested. Just as I was led by the draining of the farm to describe the details and principles of the work; by the use of wind-mills to relate my experience with the different kinds of mills, and pumps, and tanks; by my professional work as a Sanitary Engineer to describe what seemed to be the best means for getting rid of the liquid wastes of farm-house kitchens; by steaming a poor quality of purchased hay and corn-stalks to discuss the advantages and practical details of these processes; by soiling, to write about green rye and corn-fodder, and later about prickly comfrey; so I have been led by my experience with Jersey cattle to write about them.

Had circumstances made me acquainted with the more valuable Short-horns, I trust I should have been an equally enthusiastic advocate of the merits of that race. As it is, the one thing I have to say that is worth hearing about in cattle is about Jersey cattle, and it must at least be accepted as a fact that the value to the agriculture of our country of the increase in the amount of butter to be derived from a given amount of food, and of the increase in its market value due to improved quality, is a sufficiently important interest to claim frequent reference in a little corner of the *American Agriculturist.*

If it is occasionally hinted that we are "advertising the Jerseys," it is fair to reply that this is not the purpose of our writing. That, to a certain extent, this is an incidental effect of the writing, is, of course, true, but it is equally true of everything that is written by anybody about anything that anybody has to sell. In making known and in demonstrating by statistics the value of the Jersey as a dairy cow, I am simply giving information that any dairyman will be the better for appreciating. If he is led by my writing to buy a Jersey cow, that natural result of his acquisition of knowledge can only benefit him.

I am just now engaged in directing the draining of two swamps. One of them is the swamp in Massachusetts to which I have previously referred, and in which the experimental wind-mill pump proved to have too little capacity for its work; the other is in New Jersey, a tide-water swamp separated from an estuary of the Delaware river by a dyke. Formerly the fall of the tide afforded sufficient drainage, but the drying and compacting of the peaty soil reduced its level to such an extent that, especially in seasons of heavy rain, the low water sluice gate outlet has become insufficient. It can now be kept in good condition only by some artificial means. The plan adopted is mechanical draining by wind-power, and an 18-foot wind-mill is being erected. For each of these swamps I am constructing a modification of the drainage pump exhibited at Philadelphia, which has long been in use in Holland, the "Fijnje" draining-pump. The drawings exhibited were of a steam-pump of ninety (90) horse-power, capable of raising about 9,000 gallons of water per minute against a head of twelve (12) feet. My pump has a capacity of only about 160 gallons per minute.

The peculiarity of the pump is, that its waterway is so large that no appreciable loss of power will be caused by friction, as is the case in nearly all of our pumps driven by wind or by steam. The construction is very simple. The working parts are of brass and of iron, and the chambers and outlets of wood. The whole pump is placed so far below the lowest pumping level as to be always submerged beyond the influence of ice. The pump may be regarded as part of the dam by which the land is separated from the outlet stream. It has gates which open freely in the direction of the flow, so that without reference to the working of the pump, should the water inside rise higher than the water outside, the flow is automatic—as in the case of the common sluice gate. All that the pump does is to increase the movement of the water when highest inside, and to keep up the flow when highest outside. The delivery pipe discharges at the lowest drainage level outside the dyke, so that the pump has only to work against the resistance of the actual head of the water. At low tide, in the New Jersey swamp, the lift will never be more than two feet, and at high tide, seven feet. With a pump arranged to throw the water over a dyke, which must be two feet or so above the highest tide level, the pump would always have to work against a 9-foot head. The economy of power in the arrangement adopted is very great, and will allow the pump to work in lighter and lighter winds, as the tide level descends. With a fair breeze, the work would be done by a 14-foot mill, but in agricultural drainage it is important that the discharge should be as continuous as possible, and it is best to use a mill which will work in a light breeze.

The subject of village life for farmers, which was first broached in these papers a year or more ago, and which has been subsequently treated of in the "Atlantic Monthly," and in "Scribner's Monthly," has attracted more general attention than had seemed probable. The benefit that would result to the farmer's family, and ultimately, the great benefit that would result to the general interests of farming, from the fact that the life would be made attractive to the better class of farmers' sons and daughters, seemed undoubted. The drawback, if there is a drawback, lies in the danger that the cost of living would be somewhat increased. That is to say, a more attractive life involves some attractions, such as better dress, which would cost more money. On the whole, an investigation of the subject seems to show that, so far as the actual business expenses are concerned, the saving in some directions would be as great as the enhanced outlay in others. There only remains the question whether farming is capable of bearing even the slight additional expense that improved conditions of life imply. As this cannot be answered by any practical experience at hand, it would be safer to assume that farming itself would not bear this further tax. We must therefore seek some means to turn to profit the working force which village life would bring together.

The Shakers have been, thus far, very successful. While carrying on their farms in the best manner, they have, by a concentration of their forces, so as to allow odds and ends of time, and the work of women and children to be turned to account, been able to carry on a number of small manufacturing interests—making brooms, baskets, chairs, preserves, etc., putting up seeds, herbs, etc., which have been eminently profitable, and which have in no wise interfered with their farming.

I am told that in some of the villages of Cape Cod, nearly every member of every family who is either too old, or too young or too feeble for regular work, is constantly employed, from one end of the year to the other, in tying the strings into Dennison's tags. In another village in Massachusetts, which is surrounded by pine lands, and where pine trees are the chief crop of all but the best land, the only *money* producing industry of the community is the manufactory of "kits" for mackerel. Any one who has the curiosity to investigate the extent to which the so-called "notions" are sold, will be amazed at the aggregate amount of hand-labor, not requiring the assistance of machinery, that is constantly employed. The making of paper boxes, alone, is doubtless supporting thousands of families. The braiding of straw for hats is also widely extended, and probably a careful investiga tion would show that a number of persons, equal to the country and village population of the whole of New England might be supported by the work of women and children and aged people—doing work that is done only by hand. Of one thing we may be sure. Should an attempt be made to concentrate the families of thirty or forty farmers into a village, there would be no difficulty in finding some single branch of industry that would furnish employment for the inefficient members of the community. If the locations and conditions of the villages were suitable, a far more attractive and profitable field is open in the very productive industry of "taking summer boarders." The experience of village summer boarding-houses now existing, furnishes ample evidence in support of this.

Then, too, the field for coöperative industry in every branch of agriculture is almost unlimited. Whatever one man can do alone—whether in the way of breeding improved stock, cultivating grain or root crops, making butter or cheese, or selling anything that he may produce—may be much better and more effectively done if twenty of his near neighbors are engaged in the same interests, and if their forces are united to secure the best males, the best seeds, and implements, the best means of manufacture, and the best reputation in the market.

We are, of course, a very long way off from any such radical change of our customs as the village idea suggests, and, in one sense, it is a waste of words to talk about the details of a general scheme that nobody as yet thinks of attempting. On the other hand, however, all thoughtful men who are interested in agricultural questions are considering with no little anxiety the important problem as to what is to become of Eastern agriculture, with its best boys and girls jumping at every chance to run away from it. So long as this general truth is accepted, we may as well begin thinking, and thinking very seriously, about the ultimate means of relief. Some day, some radical steps will become necessary, and they will be more easily taken if taken at once, and in advance of the driving necessity. These considerations are quite enough to justify a good deal of thinking and no little writing on the subject.

Science Applied to Farming.—XXX.

More Farm Experiments with Fertilizers.

To the account of experiments given in the last article, I am happy to be able to add one of a somewhat similar series, undertaken last summer by Dr. J. W. Alsop, Jr., of this place, with the object of gaining some indications as to what ingredients of plant-food were deficient in the soil of one of the fields of his farm. The experiments were made on the plan suggested by myself in the previous articles of this series, with a view of testing the effects of manures containing the ingredients nitrogen, phosphoric acid, and potash—parallel trials being made with plaster, (sulphate of lime), lime, and barn-yard manure. The fertilizing ingredients mentioned were furnished by materials as follows.

Nitrogen, by a mixture, (No. I), containing, in 100 parts, 70 parts of dried blood with ten per cent. of nitrogen, 15 parts of sulphate of ammonia with 20 per cent of nitrogen, and 15 parts of nitrate of soda with 15 per cent of nitrogen.

Phosphoric Acid, by an English super-phosphate, (No. II), containing 23 per cent of soluble phosphoric acid.

Potash, by a sulphate of potash, (No. III), containing 65 per cent of sulphate of potash.

Nitrogen and Phosphoric Acid, by a mixture, (No. IV), containing in 100 parts, 40 parts of No. I, and 60 of No. II.

Phosphoric Acid and Potash, by a mixture, (No. V), containing equal parts of No. II and No. III.

Nitrogen and Potash, by a mixture, (No. VI), containing equal parts of No. I and No. III.

Nitrogen, Potash and Phosphoric Acid, by a mixture, (No. VII), containing in 100 parts about 70 parts of No. I, 16 parts of No. III, and 14 parts of No. II.

Lime by freshly slacked lime, (No. VIII).

Sulphate of Lime, by plaster, (No. IX).

Each of the above compounds, I to IX, was applied at the rate of 400 lbs. to the acre. For No. X, barn-yard manure was used, at the rate of 11 cords to the acre.

Below is a transcript of a portion of Dr. Alsop's private notes, showing the manner of conducting, and the results of the experiments.

Record of Experiments, Arawana Farm, 1876.

Very good soil. Light clayey loam, with gravelly subsoil. In grass seven years without any manuring. Plowed autumn of 1875. Cross-plowed April 28, 1876. Subsoiled one end, (no difference to be perceived in yield between subsoiled and non-subsoiled). Laid out in nine plots of twelve feet by one hundred and eighty-three feet—which equals about one-twentieth of an acre. Carefully sowed the plots with twenty pounds, equal to 400 pounds to the acre, of the fertilizing mixtures named—a separate mixture to each plot. The whole carefully harrowed with Howard flexible chain harrow—great care being taken not to mix the plots. Each ridged into four ridges by plow. The fourth ridge no account may be taken of, as the yield, planted in potatoes, was so poor as to render weighing and measuring useless.

May 23, two ridges in each plot sowed respectively, with Clarke's Long Orange Carrot, and Norbiton's Giant Beet, and on June 29th the remaining ridge in each plot sowed with Shamrock Turnip. Cultivated in ordinary manner. As far as could be judged by looks, those plots containing potash in fertilizers appeared the best, and those treated with lime and plaster, the poorest during the season. The beets were harvested Oct. 5th, carrots and turnips Nov. 16. Results as per table appended. The crops were measured and weighed carefully by myself, bushel by bushel, (except the barn-yard manure crops, which, being the field crops, were measured by bushel, and account kept of number of bushels), and the yield, by weighed bushel per acre, computed.

The barn-yard manure was bought, and cost—not taking account of labor, hauling, or spreading—*i. e.*, actual money paid for it, $4.37 per cord.

FERTILIZERS.	YIELD PER ACRE, IN BUSHELS.			Cost of Fertilizer per acre. (Freight, cartage and labor of spreading not computed).
	Crop—BEETS. Average weight of bushel, 48 lbs.	Crop—CARROTS. Average weight of bushel, 42 lbs.	Crop—SWEDES. Average weight of bushel, 50 lbs.	
No. I.—Nitrogen	360	283	419⅔	$12.10
No. II.—Phosphoric Acid	318	184	631½	13.00
No. III.—Potash	676¼	193½	629⅓	12.00
No. IV.—Nitrogen and Phosphoric Acid	329⅔	361⅓	767	12.64
No. V.—Phosphoric Acid and Potash	704½	361	614⅓	12.50
No. VI.—Nitrogen and Potash	632½	316	632½	12.50
No. VII.—Nitrogen, Potash, and Phosphoric Acid	463⅓	252⅔	716	10.55
No. VIII—Lime	201⅔	160⅔	567	
No. IX.—Plaster	202½	*215¼	575½	
No. X.—Barn-yard Manure, 11 Cords to Acre	†900	579	680	48.07

* Probably increased by being next below manured ground.

† Yield measured, not computed by weight, being field crops.

These figures will bear careful study. With the beets the largest crops were those fertilized with potash, plots III, IV, V. Without potash the yield was uniformly light; with potash it was large, except in VII. Here, however, the amount of potash applied was very small. If the beets had been the only crops raised, the experiment might have passed for a very good indication that potash was the lacking ingredient, and that the application of nitrogen and phosphoric acid would be of very little use on that soil. But the carrots and turnips tell a somewhat different story, doing the best with nitrogen and phosphoric acid together. The swedes seemed to be considerably benefited by potash also, much more so than by nitrogen, while the carrots do not seem to have been strikingly affected by either of the individual articles. The best crops came with phosphoric acid combined with nitrogen in IV, and with potash in V, but phosphoric acid alone proved inferior to both nitrogen and potash. Lime and plaster did but little good. Barn-yard manure proved, on the whole, the best fertilizer, though it was much the most costly and did not bring so large a yield of turnips as some of the chemical fertilizers. I confess that I can not explain the results with nitrogen, phosphoric acid, and potash. I should attribute the variations to uneveness in the composition of the soil, but considering the situation of the plants, the rows of beets, carrots and swedes being, in each of the individual cases, I, II, III, etc., side by side and close together, it seems a little strange that variations in the soil could affect the crops in such a manner. We might assume that the results are due to different ways the crops may have of making use of the plant-food offered them. We know that superphosphates are, in many places, considered almost a specific for turnips, and that beets are in many parts of Europe especially benefited by potash salts. But these are matters about which we have too little experimental evidence to decide with any degree of certainty.

The experiments described in the article last month and above teach, or rather illustrate, some very useful lessons. Both were made by intelligent, progressive, painstaking farmers, who went to work in a rational way to find which ones of the materials that their crops needed, their soils or themselves failed to furnish, and how best to supply them. The one obtained a very striking result the first year, which was confirmed by a succeeding crop. Phosphoric acid, the chief constituent of a majority of our commercial fertilizers, did scarcely any good, while nitrogen and potash proved very beneficial. The other obtains somewhat conflicting results the first year, though on the whole potash seems to be wanting. But to get an entirely reliable desision he will have to repeat the experiment at least once, and perhaps several times more. Still, it will be more profitable to do this, than to pay heavy prices for fertilizing materials that his soil can itself supply, or to lose his crops for want of those it can not furnish.

The fact is that if we are to have knowledge or any other good thing we need in this world, we have got to work for it. It was said to man long ago "In the sweat of thy brow shalt thou eat thy bread." For centuries manual labor was the chief, if not the only kind of toil that ordinary men needed to or could engage in with profit. But the time has come when all, farmers with the rest, must use their brains with their hands if they are to work economically, profitably, and happily. And in just such ways as these, by accurately studying their own soils and crops and stock and whatever else they have to do with in their farming, at the same time calling to their aid that definite knowledge, which is the result of the long and accurate experience of thousands of other more accurate and thorough experimenters, and whose results, rightly interpreted, we call science, and by applying it to their practice will their success be best assured.

I find that quite a number of the readers of these articles have planned experiments like the above this season. I should be very glad to learn the results and, if they will send me their addresses, I will try to see that they have some blanks for noting them, such as have been sent to the farmers who are experimenting with the fertilizers furnished by our Experiment Station.

The circular of directions and explanations which accompanied the fertilizers above referred to, contains the following:

"Attend to the work yourself. Don't trust it to the hired man. Watch the experiments closely. Note your observations. Make them both as accurate and complete as you can. The benefit will not be yours alone, but you will share with others the total good that will come from the combined work of all. With nearly fifty farmers engaged in this work this year, and perhaps more next year, we may hope for valuable results.

We hope you will be able to fill out the accompanying blank and return it to us when the experiments are done.

This undertaking is itself an experiment. Experience will doubtless show numerous ways in which the plans may be improved. But it is at least sound in principle. It will be a valuable lesson in agricultural chemistry to the experimenters, if nothing more. and we hope that by your earnest co-operation much good may come from the work."

W. O. Atwater,
Wesleyan University, Middletown, Conn.

French Roofed Cottage Costing $2,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a genteel cottage adapted to thickly settled localities, where the increased value of lands make it necessary to reduce the area, and build upwards. Several houses constructed from these plans in this vicinity are admired for their convenient accommodation and cheerfulness.... **Exterior,** (fig. 1.)—The foundation extends four feet above ground, giving a desirable altitute to the whole building. The front is enlivened by the numerous window and door openings, the several projections of piazza, dormers, and cornices, and the variety of the materials used. The dressing of the several parts are of simple designs. The projections of cornices, etc., should always be self-sustaining, yet while this is true there is sure to be a fancied necessity for some apparent support obvious from the outside. Such supports require special treatment, with a view to their proper form and proportion, and should be sparingly applied, giving to each one its distinct place and purpose. Brackets of neat pattern are often crowded so closely together as to cheapen and destroy their beauty, and overload the cornice, thus reversing their legitimate purpose as supports.... **Cellar,** (fig. 2.)—Hight of ceiling 7 feet; it extends under the main house only. Its hight above the ground gives an opportunity for good sized window openings. If desired at any time, an airy and light work room or laundry can be made, by dividing and flooring a part of this story at little cost.... **First Story,** (fig. 3.)—Hight of ceiling 10 feet. It has a hall running the whole length of the main house, with entrances from both front and rear. The parlor, dining-room, and kitchen, are all good sized apartments, and pleasantly arranged. Double folding doors are provided for the front entrances and from the hall to the parlor, and sliding doors between the parlor and dining-room. A bay window adds materially to the room and pleasantness of the dining or living-room. Each room has an open fire place; the kitchen has a pump and sink, with the usual supply and waste-pipe connections. The rear stoop is roofed, and has a portable enclosure of light ceiling boards, to be used in severe weather.... **Second Story,** (fig. 4.)—Hight of ceiling 8½ feet. The divisions of this story are simple—giving a hall, two large chambers, with passage between, two hall rooms, and two closets. ....**Construction.**—The estimate below provides for foundation of broken stone, laid and neatly pointed with good mortar; the stone exposed to sight on the outside to be "semi-dressed." Bluestone or other suitable stone obtained most readily, are used for the sills of cellar windows, for the steps, and for coping of the cellar entrance. The principal timber is of seasoned spruce or pine, thoroughly framed, raised, and secured. The "framing-in" of braces is too frequently omitted—cutting them "barefoot," and spiking, being substituted. The latter does very well where the frame is strongly sheathed over, and the outer siding applied afterwards. The sheathing aids largely in stiffening the frame, but should not be relied on to the exclusion of the necessary braces to square up the frame, and prevent the swaying which often happens unobserved, to be discovered when too late to remedy it. Laxity in the matter of bracing has lead to frequent errors as to their proper place in the frame. When framed in they are invariably placed in the *upper angles* under the ties and plates, adjoining the posts, and when barefoot they should be put in the same angles; never, as is frequently done for convenience, in the lower angles, nor on the sills. A moment's reflection will convince any one that *if the right angles along the principal frame are rigidly maintained, displacements will never occur*, except, as rarely happens, the whole is bodily raised from the foundation by a hurricane. The most *reliable* angles are those formed by the tie and post connections, because at these points the posts are tenoned and mortised together, and secured with hard wood pins. Those least reliable are at the foot of the posts, adjoining the sills, where their connections are secured only by the weight of the upper frame. Braces placed in the latter angles serve only as fulcrums to endanger the frames when tested by ordinary winds; but if the former or *upper* angles are made positive, by having substantial braces in them, the severest gales may be defied. The siding is of narrow, clear pine clapboards, laid on "thicknessed" sheathing. The Mansard part of the main roof is covered with 8x16 inch slate—the piazza, bay window, kitchen, stoop, cornices, window, and deck roof with I. C. charcoal tin—all laid on hemlock boards. Tarred felting is spread under all siding, and slate. The first and second stories are fully completed inside; the attic is floored, but otherwise unfinished, but may be divided at any time into rooms as shown for the second story (fig. 4.) The interior plastering is three-coat work, on seasoned lath. All sash are four lights and hung to balance weights. Blinds are properly hung (outside) to each window. All wood, tin, and brick work, usually painted, has two coats of best lead and oil paint, with stainers to suit the owner's taste. The choice of colors for the exterior is frequently canvassed during the construction of these buildings; often some person of *taste* (?) decides by "warming"—adding red and yellow, until, by the preponderance of these stainers, the most sombre and dismal colors are produced. The most appropriate and pleasing shade for the body of this class of house, is a *light gray;* for the trimmings, *dark gray;* for the sash, *burnt sienna;* for the blinds, *green.* The tin roofing should match the *slate* in color. Red colors should be sparingly used, or omitted altogether.

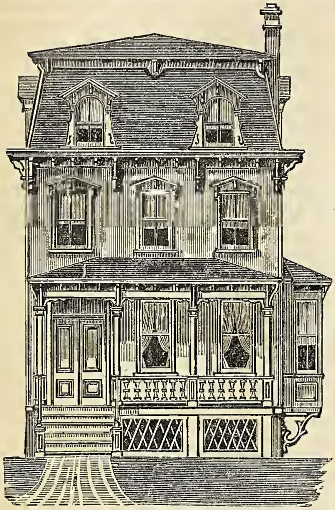


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

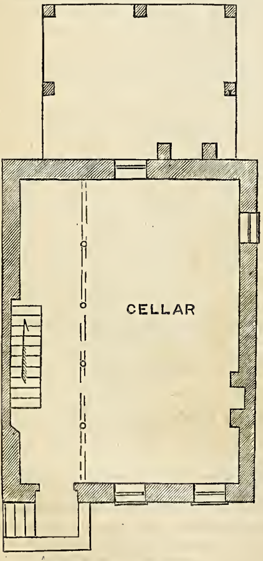


Fig. 2.—PLAN OF CELLAR.

Estimate of materials required—and total cost:

50 yards excavation at 25 cents per yard	$12.50
975 feet of stone-foundation, at 8c. per foot	78.00
45 ft. blue-stone sills, steps and coping, at 30c. per ft.	13.50
4000 bricks, furnished and laid, at $12 per M	48.00
480 yards plastering, at 30 cents per yard	144.00
Cornices and centers, stucco	30.00
4000 feet of timber, at $17½ per M	70.00

2 sills, 4x8 in. 29 feet long.	2 posts, 4x6 in. 13 feet long.
2 sills, 4x8 in. 21 feet long.	30 beams, 3x8 in. 21 feet long.
1 sill, 4x8 in. 16 feet long.	15 beams, 3x7 in. 21 feet long.
2 sills, 4x8 in. 13 feet long.	7 beams, 3x8 in. 16 feet long,
1 girt, 4x8 in. 29 feet long.	2 decks, 3x8 in. 18 feet long,
6 posts, 4x7 in. 22 feet long.	2 decks, 3x8 in. 26 feet long.
6 ties, 4x6 in. 29 feet long.	1 cross tie, 3x8 in. 18 feet long.
6 ties, 4x6 in. 21 feet long.	4 hips, 3x7 in. 14 feet long.
2 plates, 4x6 in. 13 feet long.	2 piazzas, 3x7 in. 19 feet long.
1 plate, 4x6 in. 16 feet long.	2 piazzas, 3x7 in. 18 feet long.

325 wall strips, at 12 cents each	39.00
75 joists, at 16 cents each	12.00
210 hemlock boards, at 12 cents each	25.20
cornice materials	60.00
215 sheathing, at 16 cents each	34.40
560 pine siding, at 12 cents each	67.20
8 squares slate at $8½ per square	68.00
13 squares tin at $7½ per square	97.50
65 feet leaders at 10 cents per foot	6.50
260 flooring, at 18 cents each	46.80
Piazza, and stoop, complete, $80 and $28	108.00
4 cellar windows, complete, at $4 each	16.00
5 plain windows, complete, at $12 each	60.00
6 plain windows, complete, at $10 each	60.00
1 bay window	60 00
5 dormer windows, complete, at $16 each	80.00
13 doors, complete, at $10 each	130.00
1 area door $5; stairs, $90	95.00
Closets, pump and sink	50.00
Mantles, $52.00....Tarred Felting $10.00	62.00
Carpenter's labor, not included above	110.00
Carting, average 1 mile	45.00
Painting, $130.00; Incidentals, $141.40	271.40
Total Cost, complete	$2,000.00

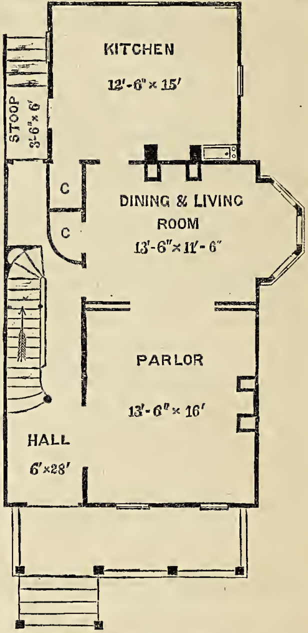


Fig. 3.—PLAN OF FIRST FLOOR.

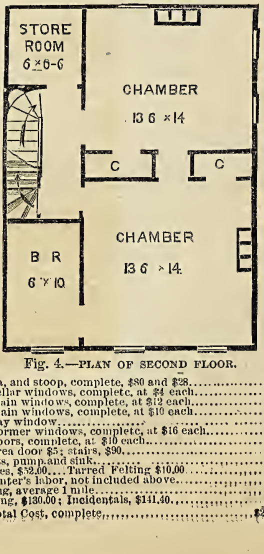
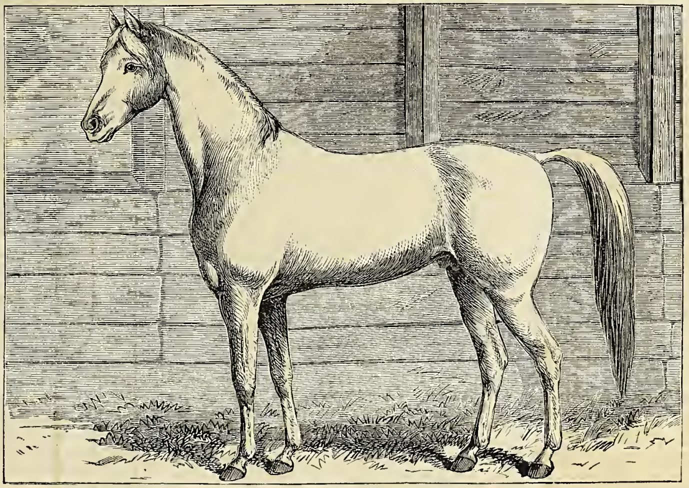


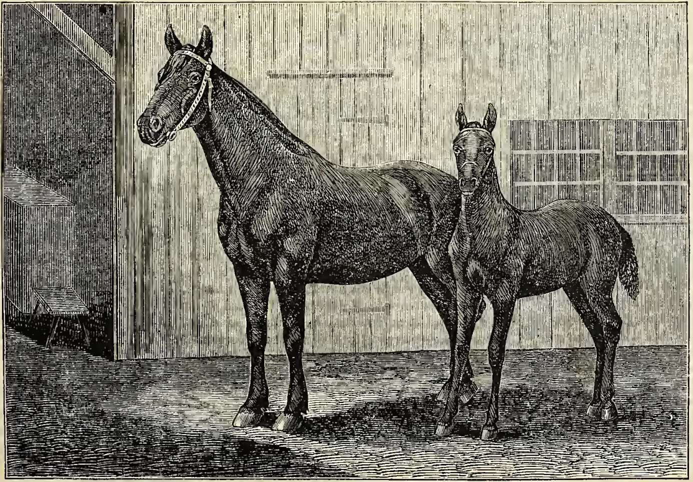
Fig. 4.—PLAN OF SECOND FLOOR.

The Jenifer Arabian—Cross of Arabian and Percheron.



ARABIAN STALLION, OWNED BY COLIN CAMERON, LANCASTER CO., PA.

We give on this page a portrait of a pure bred Arabian stallion, known as the Jenifer Arabian. This horse was imported from Egypt in 1872, by Colonel Jenifer, who purchased the animal at Ismalia, in the desert between Cairo and Suez. The fact of the purchase and exportation of the horse, is vouched for by Col. F. G. Skinner, formerly one of the editors of "Turf, Field and Farm," and now of the "Rod and Gun," who was present at the purchase, and witnessed a trial of the horse when ridden by Col. Jenifer, when it succeeded in beating a field of the best Arab horses in Egypt. The difficulty in procuring these horses is in the prohibition of their export by the Egyptian Government, whose permission to send a horse out of the country must first be obtained. This horse, on its arrival in this country, was inspected and admired by several well known horsemen. It is of the same blood as the best animals in the racing stud of the Khedive of Egypt. The horse is white in color, with silver mane and tail, is now 11 years old, is 60 inches high, and has a perfect pedigree. His original name was Ismael Pacha, which was changed on his arrival in this country to that given above. His present owner is Colin Cameron, Manager of Elizabeth Stock Farms, Brickersville, Lancaster Co., Pa. The present reputation of the horse is very high. His disposition is gentle and docile, a lady can handle him with ease, either in single or double harness, or under the saddle; he is at the same time fearless, and is not startled by locomotives or other unusual objects, thus exhibiting the traditional character of the breed. He has taken first premiums every year since his importation, and has been a very successful breeder. One of his colts, at 2 years old, measured 15 hands and 1 inch, and all of them are noted for the size of bone and muscle. No breed of horses is so useful in improving other races, as the Arabian. Nearly all, if not all, the good qualities of the various races of horses now in existence, are derived from the Arab. The Hungarian horses, noted for bottom and endurance, are of Arab descent; the Russian Orloff, a famed trotting race, has the same lineage; the French Percheron derives his fine bone, his symmetry, his soundness of constitution and his capacity for hard work, from the Arab; the English racer, known throughout the world as the fastest horse in existence, and our own native running and trotting breeds, inherit their most valuable points from their Arab ancestry. Even the French-Canadian, the undoubted source from whence sprang our useful Morgan horses, looks back to the same origin. The Arab is well fitted by the necessities of his position, the work he has to perform, and his manner of subsistence, to thus become the general improver of horses everywhere. The conditions of the life of his owner are such as to demand, in this horse, endurance and speed, and the Arabian has been for centuries bred with a view to the development of these, which he possesses to a degree unattained by any other known breed in the world.



PERCHERON MARE AND ARABIAN-PERCHERON FOAL, OWNED BY J. J. PARKER.

For a horse for the general uses of the road or the farm, the nearer we can approach the union of the thorough-bred, with mares of the larger classes, the nearer we approach a perfect work horse. There are uses for which the heaviest class of horses are found to be the best, but these are the exceptions and not the rule. A medium sized horse, springing from, say the Percheron, or some other heavy race, on the one side, and the thorough-bred on the other, should combine all the excellent points to make it valuable as a working animal, except for rapid work. We are enabled to give here an example of such a cross, by the kindness of Mr. J. J. Parker, to whom we are indebted for a photograph of his pure bred Percheron mare, "Rosa Bonheur," with her colt "Arabian Boy," by the Jenifer Arabian. A copy of this photograph is given in the engraving on this page. The colt was six months old when photographed, and possesses the fine, round, bold form of the Percheron, with the good action of the Arabian. Mr. Parker has raised other colts of this cross, and exhibited three of them at the Centennial, where we fortunately had an opportunity of inspecting them, and of observing the excellence and promise of the cross. The Board of Managers of the Centennial were so favorably impressed with these cross bred colts that, although by the rules of the exhibition such animals were excluded from competition, a separate class was made especially for them, and not only was a special award made for them, but a complimentary notice was given to Mr. Parker, for his laudable enterprise in originating the cross and thus proving its value. Mr. Parker deserves the credit of having been one of the first to introduce the Percherons into Pennsylvania, and several years ago the *American Agriculturist* took occasion to compliment him upon his success in introducing stock of the highest character. Since then he has made other visits to France, and has selected with great care many fine specimens of the Percheron breed for importation to this country. In some respects, our breeders have not exercised sufficient care in making selections, neglecting the chief point of value in these horses, viz., their adherence to the Arab type, and their possession of the fine bone and symmetrical build of their ancestral race. In consequence, we have taken occasion to warn importers of their mistake in this respect, and of the danger of injuring the credit of an excellent breed, by bringing in animals of impure blood, or selected more for gigantic size of carcass and limb, and for excessive weight, than for the more valuable points of sound constitution, symmetrical form, and activity of movement. In noticing such errors of judgment, we had no reference to the importations of Mr. Parker, which have been highly creditable to him, and of great service to the agricultural interest of his State and neighborhood. His recent enterprise, of establishing the value of the cross of the Arab, or thorough-bred, on the Percheron, will confer another obligation upon farmers and horse-breeders, and will undoubtedly tend to advance in value the higher bred types of the true Percherons. After all, it is only the high bred animals of this or other breeds, that are worth using in breeding, as it is only from these that we can look for satisfactory results in the progeny.

Among the Farmers.—No. 17.

BY ONE OF THEM.

The Mt. Lebanon Shakers.

I have been repeatedly at New Lebanon, N. Y., but until a few weeks ago never went among that peculiar band of religionists, the Shakers, several "families" of whom are grouped picturesquely upon the side of the mountain above and east of the village. It is a good climb to get up to the "North Family," and the hill still towers above, and offers one boon to these good farmers, namely, running water in abundance, delivered in pipes at every floor of the house or barn, or any other building, wherever it is needed. This family has

A Famous Stone Barn,

which is 296 feet long, 50 or more wide, and at one end five stories high. It has been repeatedly described in the agricultural papers, and is really an admirably built and arranged structure. I do not like stone barns, and have no doubt that at times the moisture settles upon the inner sides of the walls in a way sure to damage hay which comes in contact with them. The barn stands end to the hill, and a double drive-way and floor allows a number of loads of hay or grain to be driven in at the same time. Deep bays are upon both sides, and there is storage room for a great amount of hay, straw, and corn-fodder. On the floor below, are the grain rooms and shoots for carrying hay to the cattle, and grain and feed to the mixing troughs on the cattle floor. This, the third floor descending, is high, well furnished with windows, thoroughly ventilated, and exceedingly convenient in arrangement. Stanchions are used for the cattle, and they are so constructed that sections of a dozen or more may be moved at once. The cows are admitted, and as they put their heads into the mangers for their feed, they are all locked in by one effort. This is not a very unusual contrivance, but after milking is over, and the cows are to be left to themselves, common "tie-chains" are put about their necks, and the stanchions are unfastened, which gives the animals much more liberty. This is a humane plan, at any rate, and as such worthy of imitation.

The floor at the rear of the stalls is a very broad, shallow gutter, sloping so as to conduct the liquids to conduits, which discharge them upon the compost heap. Hay, as I said, comes down by shoots from the floor above; each shoot supplies two head, but each cow has her own feeding-box. These are of cast iron, hold about a bushel each, and are in form like quarters of a hemisphere. They are hung upon pins or pivots, which are, as it were, continuations of the strait perpendicular edge, and upon these they may be swung in or out of the manger, swinging exactly through a quadrant. When empty, they are drawn through the partition, are filled from the feeding floor, and pushed back.

Management of the Manure.

There is a little tramway, with light cars, that can be easily shoved by a man upon the floor behind the cattle stalls. At one end of the building, this tramway is continued in a semicircle through a room shut off by a partition wall and doors from the rest of the barn, and is so arranged that a car may, if necessary, be run around from one side of the cow floor to the other. The room through which this semicircular railway runs is a big compost factory. The cars dump their loads into the gulf beneath; muck is hauled in upon the upper floor, and by means of a trap-door, dropped through upon the mass, all sorts of refuse material, suitable for the purpose, are added, and the heap is leveled and worked over occasionally so as to give homogeneousness to it, while doors at the ground level afford access to carts. This method of making manure must be excellent in its results, for the material can be worked over, kept moist or dry, mixed with absorbents—as muck, leaves, litter, etc., and the fermentation perfectly controlled by water.

The Cattle, Grade Short-horns,

for the most part, looked very well. It was about noon when we were there, and almost all were in the yards. Among the older cows there was great diversity, yet most showed strong evidence of Short-horn blood, while the young stock exhibited the characteristics of their thorough-bred sire in a marked degree. I have rarely seen a better lot of young things, or better growth for their age. Those in one yard were from five mouths to near a year old—no more, for though I judged them to be considerably older, "Elder Frederick" gave such an emphatic "nay" to the suggestion, twice made, that I gave up the right of private judgment. The Shakers are good feeders—all their cattle were well fed, clean, comfortable, and healthy. The barn was very sweet, cleanly, and in perfect order.

The Shakers as Economists.

They economise in certain kinds of labor, but clearly take a great deal of unnecessary pains and useless steps. As economists, they are astonishingly extravagant in the matter of buildings. They probably live at a very small expenditure of money; but of certain kinds of labor they have a surplus, and make use of it in erecting buildings, and in taking care of them. With a very little curtailment of comfort, buildings of half the aggregate dimensions, would answer their necessities, and save time and labor now given to much drudgery.

Other Families.

Our time was so limited that we could only hurry through some of the other barns, where we saw a similar stock of cattle, managed in much the same way. The manure was not kept under cover and composted as at the big barn, but thrown out, mixed with straw and litter, and composted in a measure in the yards. I am not altogether certain that there may not be a saving of labor and ease in management secured by this less philosophic process, which makes it desirable. Perfection is hard to reach in any sort of thing, and as a rule it does not pay to attempt it in the coarser operations of farming. The real desideratum is the nearest approach to it consistent with economy of labor and peace of mind. Various simple manufactures, for example, chair making, are conducted independently of the farming, gardening, herb raising and drying, and similar operations, but in these outside employments, the laborers are "world's people."

The Shakers are good farmers, as judged by their land, their stock, their buildings, and one sees many quaint practical devices, some of which would have been worth making special note of. They are very systematic in these little labor-saving matters, and I recalled with a smile the half humorous statement of Charles Nordhoff in his "Communistic Societies of the United States," to the effect that both indoors and out their ways and devices were those to be looked for where old bachelors and old maids are associated in every day life,—for Shakers are rigorous and consistent celibates.

Factory Dairy Butter.

Not far from a year ago I wrote an account of a visit to Farmington, Conn., and about the success of the butter dairy established there. I believe it is an acknowledged fact that the "creamery" butter, taking the year through, is better than the best previously made in the farmers' families; certainly it brings a higher price, and meets a readier sale. The question arises—is not this then the way to secure the best results in butter making? I must say I had the opinion that it was, until I visited Mr. Starr's "Echo farm," barns, and dairies—and a few days after—early in March—had the opportunity of examining some samples of butter from Locust Grove, the farm of Mr. Wm. B. Dinsmore. There is a precision of cleanliness and purity quite possible about the stables and the feeding, the dairy, and the butter making of a private establishment, where stable-men and dairy-folks all feel a personal responsibility for, as well as pride in, the reputation of the butter for delicacy of flavor and all other excellence. When thirty or even ten farmers bring their milk to the "creamery," it is improbable, if not impossible, that any such cleanliness should prevail without an exception.

Whatever Affects the Milk Affects the Butter.

The quantity, as well as the quality, of the food produces immediate variation. We were rejoicing over the excellence of our winter butter a few weeks ago, when suddenly its quality fell off from no known cause; finally it was found out that the man who fed the cows had been practicing unusually rigid economy in feeding, and as a result the cows were half starved. They fell off in milk, and the quality of the butter was at once affected, as shown particularly in a lack of flavor. A change was soon after instituted in our domestic arrangements, and during the inter-regnum, I milked the cows myself, night and morning. This afforded me an opportunity of testing the value of the

Channel Island Milking Can.

I brought one of these out with me at the last trip, together with the straining cloths and shells, which are there universally used with them in milking. This can was minutely described in February of last year, but I have never been able to induce the hired man, who milked, to use it. Now, however, as my own servant and master, I took the globular ewer with its flaring top, not over 8 inches wide, tied over this the strainer-cloth, pressed it down into the neck of the can, laid the shell into the sag of the cloth, and found no difficulty at all. The milk may spatter a little at first, but as soon as there is a little foam this ceases. By this means the milk is strained just as fast as it is drawn, and immediately removed from the contaminating air of the stable, as well as from all those specks of manure, dandruff, and hair, which so frequently, if not always, fall into the milk drawn into the ordinary pails. I became really attached to the system, and am happy in finding that the new man takes kindly to it, and that it seems as easy for him to "get the hang" of it as of any other new pail. The milk is of course strained and treated as before.

What do we Strain Out of Milk?

I had the opportunity recently of examining, under the microscope, certain minute brownish particles which were removed from milk by cloth strainers, after it had been strained in the usual way through wire gauze. These brown particles were determined by our village doctor, a man of no mean attainments in his profession, to be of "*pavement epithelium*," which must have come from the interior of the udder. The straining cloth was double, and a good many of these particles were arrested by the second fold. In addition to these epithelial scales, there were multitudes of very minute hairs, so small that they were hardly visible except as a downy dust, to the naked eye. Now it is certain that the presence of epithelium in milk is a great incitement to change, and it may be to changes unfavorable to high flavor in the butter. One, to whom I spoke about this, sees in these impurities important aids to digestion, and thinks he would be actually "flying in the face of a beneficent Providence," to strain them out. This is only another argument in favor of the view that factory butter can not really compete with that which is produced in the very best private dairies. Straining the milk as it is drawn, without question, separates many of these particles, as well as of the fine hairs, at the outset from the milk, so that their influence for good or ill is of but short duration.

Care Needed in Shipping Horses.

I called in at Stoddart's Bonded Stables, in Greenwich street, a few days ago, and there found the finest young Clydesdale stallion I ever saw. He was brought out upon the Ethiopia, and had been recently landed. The groom in charge, James Melvin, has made six trips with horses across the Atlantic, and has probably brought out the best Clydesdales that have ever come to this country. He started with three nearly uniformly good horses, consigned to John Cochrane, of Goodland, Ind., and this is the only one that survived the voyage. Melvin has never before lost a horse. These were young—this one being three years old, though weighing 1,900 pounds. They were put on board after being led 16 to 20 miles each, without rest and without food, nervous, high strung colts, carrying all or nearly all the flesh they could be loaded with. They were swung from the wharf, high up into the rigging of the steamer, and then lowered into the between-decks. The ship was soon under way, and the rolling and pitching, though not extreme, were enough to keep them in a constant condition of intense nervous excitement day after day. The two which died ate nothing. One soon developed pneumonia, which ran its regular course rapidly. The other, Melvin describes as dying from nervous excitement and exhaustion. He was really scared to death. Weakened and exhausted from a journey of 20 miles, when he probably had never traveled more than three at a time in his life, he could hardly stand when brought to the ship. He was so nervous when taken on board, that he "trembled like a leaf, and sweat like a river," the perspiration continuing for several days. Meanwhile, his exhausted vitality could not throw off the cold which he took, and so it also ran into lung fever and he died. The horse which survived had no doubt a better constitution, a less nervous temperament, and greater intelligence, so he did well, although he suffered nearly the same treatment, arriving at the ship's side after a 16 mile walk, "free and blythe as a bird." A great temptation is offered to shippers of live stock to curtail expenses to the last extent. Two or three or, better, four days rest and feeding, after their long walk to Glasgow, would no doubt have put them in such trim that they might all have been landed in New York.

This is an extreme case, the shipper being terribly punished for his parsimony, for his loss on the horses is hardly less than $1,800 to $2,000 each. Nevertheless, smaller, though similar, losses are constantly occurring in this country from the same cause. Horses should never be over fat when started upon long journeys, and as a nervous animal is always much wrought upon by the incidents and surroundings of a journey by rail or by steamer, it is always best for him to begin the trip after a good rest, and after having for a day or two had good care and liberal feeding.

Talks on Farm Crops.—No. 4.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"The question is," said I, "will it be better to plant it to corn, corn-fodder, beans, or patatoes?"

We were talking about an old pasture lot that the Deacon wants me to break up. I cannot spare the pasture until the first or second week in June; or if I could, we should not be able to spare the teams to plow it until we were through our regular planting. Mangel wurzels or turnips are out of the question, as they will not do well on sod-land, unless plowed the previous summer or autumn.

It might bring a fair crop of some early kind of potatoes, such as Early Rose, or Early Vermont, or even Late Rose. It would depend a good deal on the season, and on the "bugs," and on the condition of the land. If it worked up mellow and moist, the chances would be favorable for a crop. But if the land turned up dry and hard, I should hesitate some time before putting in good potatoes worth $1.50 a bushel—and it would certainly be no use to plant small, withered-up seed on such land, so late.

"That land," said the Deacon, "if plowed with a jointer, would work up as mellow as a garden." —"If so," said I, "then some early variety of potatoes might turn out a big crop, even if not planted before the middle of June."

I have no faith in planting corn after the first week in June. I would rather drill in corn for fodder.

"That is so," said the Deacon; "I would drill it in as we do wheat, and cut it with a reaper."

"Not I. There is not one crop in ten so treated that does well. The crop is yellow and sickly, and burns up just when it ought to be growing most vigorously. I would drill in the crop with a wheat drill, but I would make the rows 28 or 35 inches apart. I like to sow 3 bushels of seed per acre, and as the drill will not sow this much at 28 or 35 inches apart, we put three of the rubber tubes into one coulter. That is, we deposit the seed of three rows in one row. This makes it thick enough."

"Better let them all run," said the Deacon, "and cover the whole ground."

"How any man," said I, "can say so, or think so, is one of the mysteries of human nature. I do not know a single good point in favor of the plan."

It is no trouble to drill in the corn in rows 2½ to 3 feet apart. No hand-hoeing is required. But you must use the horse-hoe freely and frequently between the rows. The crop can be cut with a good reaper, and the land will be left clean and mellow.

In regard to beans, if I thought they would bring as high a price next year as they do now, I should be tempted to put in several acres. But it is not wise, as a rule, to put in a crop out of your ordinary rotation, simply because it brought a high price the year before. Beans have been in the past, and will be in the future, a very profitable crop on good, clean land, with good care and treatment.

It is a great mistake to suppose that any land is good enough to raise white beans. It is a still greater mistake to suppose that beans do not impoverish the soil. Beans, peas, and clover, are all leguminous plants—all contain a high percentage of nitrogen, and all have the power of gathering up nitrogen from a soil comparatively poor in it. But if the nitrogen is not in the soil, you need not expect a good crop of beans, peas, or clover.

It is your good farmer who gets good crops of clover, peas, and beans. And he gets them because he *is* a good farmer, or has good land. It is not the growth of the clover, peas, or beans, that makes the land rich.

"I don't see what you are driving at," said the Deacon, "though it is a fact that the men who have the best success in raising beans, are the men that are what you call good farmers—men who have good land and keep the soil in good heart."

"The idea I am endeavoring to enforce is this, beans are, taking one year with another, a profitable crop on a well-managed farm. I do not say profitable on rich land, or on land that has been manured. Beans are not a crop that specially needs manure, or that specially needs rich land. And yet they are seldom a profitable crop on any farm that is poorly managed or badly cultivated. Pigs and poultry are sometimes called the scavengers of the farm—they pick up what would otherwise be wasted. On a farm where much grain is fed to horses and cattle, a certain number of pigs and poultry can be cheaply kept. But there are farms where pigs would find it hard work to pick up a living. Now beans, peas, and clover, are the vegetable scavengers of the farm. They can pick up a living on a liberally treated farm. And on such a farm the bean crop is, other things being favorable, usually quite a profitable crop. But on a run-down poverty-stricken farm, beans would fare as poorly in the field as the pigs and poultry in the barn-yard.

There are thousands of acres of beans raised in this county and the county adjoining. On many farms it is the principal crop. And not a few farmers have grown rich in the business. Every few years the beans are high, we hear of this man and that man who sold their crop of beans for so many thousand dollars. What wonder that such a man as myself, thinking how pleasant it would be to have one or two thousand dollars, should be tempted to put in a dozen or more acres of beans.

I have known many farmers act in this way. But I have rarely known one that met with any decided success. I have known them to raise a good crop, but the price was low and they gave up the business in disgust; or if the price was high, the crop was poor, or it was damaged in harvesting.

The conclusion of the whole matter then, is this: If you are a good farmer, or have made up your mind to be a good farmer, and have determined to work your land thoroughly and treat it liberally, and you want to raise beans, then go into the business moderately and stick to it. There is money in beans. And the crop has many advantages. It can be planted after we are through with all other spring crops. It is planted in rows wide enough apart to admit the use of the horse hoe, and the land can be kept clean. It is, too, as I have said before, a crop that will pick up its own living —if there is anything to pick up.

It is not a crop that requires, either in planting, cultivating, or harvesting, a great amount of labor; and what is equally important, the work required has not to be done when other work is pressing. Pulling the beans is the heaviest item of labor—but it is usually done after wheat and barley harvest, and before corn must be cut or potatoes dug.

And last, but not least, bean vines, if saved in good condition, make excellent fodder for sheep and cows. A good crop of beans will enable you to keep more sheep and make more manure; and if you get a good crop, and they bring a good price, you have a nice addition to the receipts of the farm.

Beans do well on sandy land provided it is rich enough; and they do well, and sometimes better on a clay loam, provided it is well drained and turns up mellow and moist, so that the drill will deposit the seed in good, deep, warm earth. In such soil, they are soon up and you can start the horse hoe.

"But do not cultivate," said the Deacon, "when wet with dew or rain, or the leaves will rust."

"Perhaps so," said I, "but at any rate cultivate, and cultivate repeatedly and thoroughly and use the hoe if necessary." Many bean fields are disgracefully weedy and a reflection on our common sense. The extra labor of pulling beans among the weeds would more than suffice to kill the weeds when young—and the yield would be far greater and the quality better.

We usually plant on clover sod, the first or second week in June. The bean planters in common use here make the rows 2 ft. 5 inches apart, and drop the beans in hills a foot or fifteen inches apart.

"Many farmers," said the Deacon, "sow with a grain drill, in rows 28 or 35 inches apart, dropping a bean every two or three inches in the row."

"Yes," said I, "and some farmers who have tried both plans tell me that they get a better yield in this way, than when four or five plants are grown together in one hill a foot or fifteen inches apart. But if the crop is likely to require much hoeing, it is better to plant in hills, as you can pull the hoe between hills and kill the weeds."

"If you plant on a good clover sod," said the Deacon, "or on an old pasture, and use a jointer plow that completely covers the grass, you will rarely need to hoe much."

There is some truth in this, but all I have to say is, make up your mind to hoe if necessary. It may make all the difference between success and failure.

Drenching Horns for Cattle.

Very frequently, a grave disorder among domestic animals, may be averted by the timely administration of a simple medicine. Cows, especially, are subject to many serious diseases, which, though very troublesome when fully developed, are easily prevented, or cured, by instant attention on the appearance of the first symptoms. Diseases of the digestive organs, if neglected at first, rapidly develop into affections of the blood, which, becoming poisoned or disorganized, interrupts the vital functions, and the animal often dies before its real condition is suspected. A brisk aperient, consisting of Epsom or Glauber salts, given at the first appearance of almost any disorder, will nearly always relieve the animal and prevent further mischief. Hence no farmer should be without a supply of one or the other of these useful medicines, and the means of administering a dose dissolved in water. The drenching horns, shown in the engravings on the next page, will be found well adapted to this purpose. The ordinary vehicle for giving an animal a dose of physic, the long-necked wine-bottle, is a very dangerous one, and should never be used. There is a strong probability, whenever this is used, that the neck may be broken off by the struggles of the animal, and swallowed, or fragments of glass may pass into the throat or windpipe, causing fatal lacerations or instant suffocation. The tin or copper horn, shown in figure 2, is a perfectly safe instrument for this purpose. The engraving has purposely been made large, that it can be used by any tinman or coppersmith as a pattern for making one. Its width in the broadest part may be six inches; the bottom may be an oval, six inches in the longer diameter, and three in the smaller; the whole length of the horn may be 10 to 12 inches, in order to hold about two quarts. A ring is fastened to the bottom, upon one side, by which it may be hung up when not in use. When used, the liquid is poured into the horn by means of a funnel, the small end of the horn is inserted into the mouth of the animal between the jaws, where there are no teeth, and the head being held up, the medicine trickles or gurgles out of the horn down the animals throat so slowly, that it can be easily swallowed. A very good and cheap substitute is represented in figure 1. It is made of a large common horn, the small end of which is sawn off at the proper place, and, if found necessary, is bored to make the aperture large enough. The large end of the horn is closed with a piece of wood, neatly fitted and secured by a few small screws; or it may be covered with a piece of sheet copper, the edges of which are turned up around the horn and secured by screws. For cement, a little bath-brick dust, mixed with melted rosin, and a few drops of linseed oil, may be used hot. A hole should be bored in the bottom, to be closed with a plug when the horn is filled, and removed when it has been properly placed in the animal's mouth, if found necessary to allow the liquid to flow more freely.

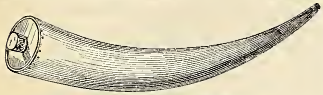


Fig. 1.—A DRENCHING HORN.

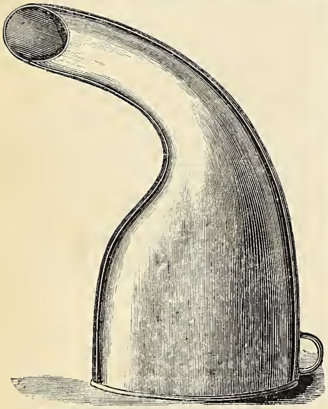
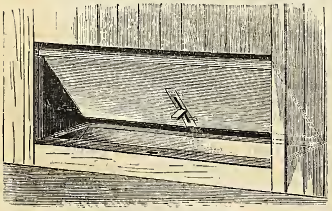


Fig. 2.—A DRENCHING HORN OF METAL.

A Swinging Door for a Piggery.

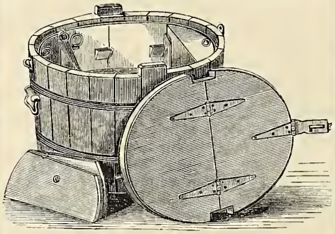
"H. S. S.," of Iowa City, Iowa, sends the accompanying illustration of a swinging door for a piggery, which is intended to be used together with a feed trough. The engraving is intended to show a portion of the front wall, or partition of the pen. The door is hung upon hickory pins set into the frame, one upon each side, and may be swung back as shown, so as to permit access to the trough for pouring food into it, and at the same time closes it against the pigs. The door is held in place by a bolt sliding in a slot, when in either position, as shown in the engraving. In a piggery, the pens would be most conveniently arranged on each side of a passage way, with feed troughs opening into the passage by doors of the style here described.



A SWINGING DOOR FOR A PIGGERY.

An Improved Package for Butter.

The demand for choice butter, put up in cakes ready for use, and the production of such butter to meet this demand, have so greatly increased, that there is a wide inquiry for the best methods of packing the butter for sale, and the best kinds of packages. Several kinds of packages, suitable for shipping choice butter, have been described from time to time in the *American Agriculturist*, but in these, as in other things, improvements are always being made. When at the Centennial Exhibition we noticed something new in the way of butter packages, which we here describe, it being the time when the business of shipping butter is beginning for the season. This package was exhibited by Mr. J. G. Koebler, of 503 North Second St., Philadelphia, who is well known as a manufacturer of cedarware, and whose tubs and vats, of enormous size and capacity, were so conspicuous at the Exhibition. The butter-tub in question, is oval in shape, made of seasoned white cedar, and therefore inodorous, is strongly bound with galvanized iron bands, or brass hoops, and is well adapted for resisting rough treatment in use. The shape of the tub is shown in the accompanying engraving. Within the tub is a tin cooler, having a removable ice chamber at each end, (also shown in the engraving). These movable chambers are a great improvement on the old style of fixed ones, as they can be filled with ice or emptied of water with far greater ease and convenience. A series of ledges is made upon the inner side of the cooler, by which wooden shelves for holding the butter are supported. These shelves are made in two parts, as shown resting against the tub, and are perforated, both for facility in moving them, and to allow the circulation of air within the tub, to equalize the temperature. The prints are laid upon these shelves. When rolls are packed the shelves are not used. The cover is hinged in the middle, as shown, and has a fastening at one end, and a hinged hasp at the other, so that it is easily removed or placed, and may be locked for transportation. The many advantages of this package will commend it to those of our readers who are engaged in shipping or taking to customers choice butter in rolls or prints.

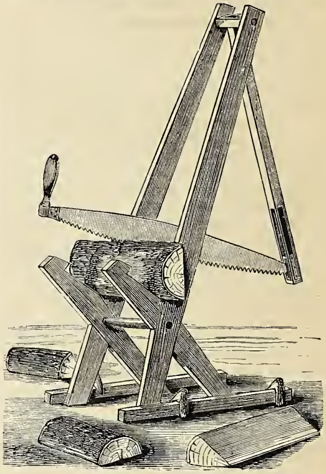


A TUB FOR PACKING BUTTER.

Maturity of Beef Cattle.—If we compare the rate of growth of well bred and well fed animals, from their birth up to the age when they are generally supposed to be mature, it will be found that the most rapid increase is made at from 2 to 3 years. This is now the age at which there is most profit to the feeder. After that time the growth is not only slower in proportion, but consists chiefly of fat instead of flesh. Our best stock now reaches full maturity soon after arriving at the age of 3 years, if skillfully fed. If fed improperly, the period of ripeness may be postponed a year or more, or the animal may never reach the weight and condition which it might otherwise have done. It is not to be understood that we refer only to the present most popular breed, the Short-horn. Any of the pure breeds of beef cattle, the Herefords, Devons, or Black-polled Scotch, are all subject to the same rule; and not only is it true with beef cattle, but in a corresponding ratio with sheep and swine as well. A wether should come to market at less than two years old, and pork is most cheaply made by feeding grades, of any of the pure breeds, for one year only. No pork can be more profitably fed than that of a well bred hog of 250 to 300 pounds of one year old or less.

A Handy Frame for Sawing Wood.

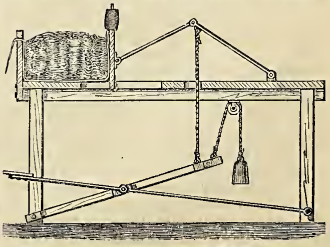
G. McAdam, of Egmondville, Canada, sends a draft of a very handy sawing frame, contrived by Mr. Jos. Stevenson, Egmondville. This frame has, in this locality, altogether superseded the buck saw. With one of Boynton's cross-cut saws, there is no trouble to cut cord wood; the end where the saw is inserted in the pendulum should work in a slide. The accompanying engraving very clearly represents the frame above mentioned, so that one could be readily constructed from the illustration without the need of any further description.



A FRAME FOR SAWING WOOD.

An Effective and Simple Wool-Press.

Where there are only a few fleeces to be handled at shearing time, there is no necessity to use a wool-press for the rapid tying of the fleeces. A flat table may be used, upon which to spread out the fleeces; the sides and ends are first turned in, and the whole then rolled up neatly and tightly, and tied; three twines are put around it, no more string being used than absolutely necessary. But where hundreds, or thousands of fleeces are to be packed, a press that can be quickly worked should be used. Such a press is shown in the accompanying engraving, which represents a section of the table. The presser consists of a fixed board, and a sliding one behind it. The slide is moved forward by pressing the foot upon the treadle, and when



A CONVENIENT WOOL-PRESS.

the foot is lifted, the weight, seen behind the table, lifts the rod, and the elbow-jointed lever above the table, and draws the slide back. A fleece is folded rapidly one way upon the table; is put between the sides of the press; the foot is applied, and the fleece is squeezed very tightly. Some balls of twine are placed on pegs on the slide, and the strings are drawn across the press, through slots made for them in the front, before the fleece is placed in the press. The strings are tied quickly, cut with a knife, kept in a proper place at hand, and the fleeces are thrown upon a heap near by, until they are bagged. To make this press, all the materials needed are some timber, a board, some oak or hickory rods and pins for the joints, a few screws, and a few screw-eyes and staples.

Slatted Stable Floors.

A dry stable floor is very desirable, but very rare. It is a difficult task to keep a horse clean that rests upon soiled litter. The difficulty is not so great with mares as with horses. By using a slatted floor, properly constructed, with drain channels beneath it, the litter being dry, the horse may be kept clean. The floor may be made of square bars of chestnut or spruce, an inch-and-a-half or two inches thick, with half-inch spaces between them, and having the ends let half-an-inch into the end pieces. The frame, as shown in figure 1, is held together by quarter-inch iron rods, with nuts and washers at each end. These are sufficient for one floor five feet wide. This frame should fit the stall closely at the width, but need not be longer than half its length, as it is not needed under the fore feet. The forward part of the stall may be planked to make the whole level. The drains should be channels, cut with a chisel, ax, or gouge, in the shape shown at figure 2. The moisture draining through the open spaces of the floor, is carried off by these to the gutter in the rear. Such a floor may be used without any bedding whatever, if dry, clean sand is scattered over it twice a day. Where such sand can be procured, this plan is healthful and advisable, or where litter is scarce, bedding may be dispensed with altogether on this floor, which is always dry. When clean sand is used, it is very easily brushed off of the animal's coat, but if the sand is loamy, the coat can not readily be kept clean.

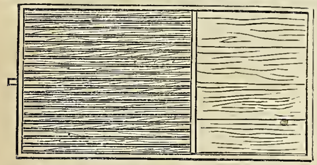


Fig. 1.—A STABLE FLOOR WITH SLATS.

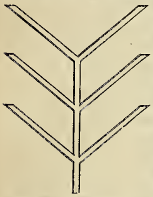


Fig. 2.—CHANNELS.

The Winter Vetch in Hungary.

BY G. CSELLEI, ALTENBERG, HUNGARY.

[Hungary is a country about which our people probably know less than of any other portion of Europe. It is eminently an agricultural country, and the farmers are generally a remarkably intelligent class. The *American Agriculturist* finds a larger number of readers in Hungary than in any other part of the continent, and it is occasionally in the receipt of interesting communications from Hungarian farmers; an example of which is here given with thanks to the writer from the EDS.]

"The Vetch has been raised with us, (Wieselburg Co., Hungary,) for a few years, and seems to be valuable for fodder; it has been raised in Switzerland—to which country it was imported from England—since the year 1869, and in spite of the severe north winds of that country, it succeeded very well. It is sown in the end of August, or in the first part of September, mixed with rye, in the proportion of about 2 bushels of vetch and 1 bushel of rye to the acre. The vetch is sown after wheat, in deep-plowed and well-manured land, and is followed by sugar beet, green corn, spring vetch, or potatoes. The Winter Vetch may be mown early for dry fodder, and gives the great yield of 4½ tons in hay per acre. This large yield results from its numerous branches and abundant leaves; when mown early in spring, it grows again, and gives a comparatively good yield of seed also.

Our farmers here procured the seed in the year 1871, from Switzerland; at that time the price of 100 pounds was about $4. Until recently it was only sown for seed, because the seed was yet scarce with us; in the future it will be raised for green food also. The Winter Vetch may be mown about the middle of April; the second mowing, i. e., the grain or seed harvest, occurs at the same time as that of oats. The following directions may be given to secure a good yield of Winter Vetch: 1. The sowing must be done in the first part of September. ....2. Two or three bushels of vetches may be sown to an acre, thoroughly mixed with half to one bushel of rye....3. If the growth of the crop is very luxuriant in the autumn, it must be slightly mown, (or pastured by sheep or calves)....4. For the mixture of vetch and rye, we here use the so-called "Johnrye," because this remains succulent for a longer time than the common kind.—The Winter Vetch will become an important crop for our farmers, because we raise an early green fodder of an excellent quality, and the production of winter crops is much more secure and abundant than that of spring crops. I intend to send a new seed of Winter Vetch to America for trial this year.

A Machine for Sorting Potatoes.

Those who grow potatoes largely have much trouble in sorting them into different sizes, the work being done by hand, is consequently slow. At the best it is disagreeable work, and a machine in which it could be done, would be very desirable to have. Such a machine is here described and illustrated. It is intended to be operated much in the same manner as a grain fanning mill, but without the blowers. It consists of two sieves, made with longitudinal bars with spaces between them, of such sizes as will permit the smaller potatoes to pass through; these have spouts at the lower corners, by which the larger potatoes, that do not pass through the spaces, are discharged into boxes at the sides. The sieves are like that in figure 1. They are hung loosely, by means of iron rods, in a frame, as shown at figure 2, (which shows the end view of the machine), so that they may be shaken easily. As they are shaken upon the upper sieve the potatoes are separated, the smaller ones falling through the spaces on the second sieve, where they are again assorted, the smallest passing through on to the floor or into a box placed to receive them. The sorted tubers are caught in the side boxes, as shown. Upon the top of the frame, the side view of which is shown in figure 3, there is a hopper, into which the potatoes are thrown with a scoop, and from which they pass through an opening in the bottom on to the sieves. There is no patent on this machine, nor do we know of any machine that is used for this purpose, of any kind whatever in the country. Any person needing or wishing for the machine, must either make it for himself or order it made. Any carpenter or mill-wright ought to be able to make one with the help of these engravings and this description. As to the size and proportions, these may be chosen to suit any circumstances. In hight the machine need not and should not be more than 3 feet, for convenience in use; for length, 5 feet would be a moderate size, and for width 30 inches to 3 feet. The material may be pine or chestnut for the frame, and ash or oak for the sieve bars, which have the heaviest wear.

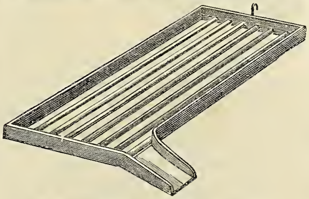


Fig. 1.—SIEVE OF SORTING MACHINE.

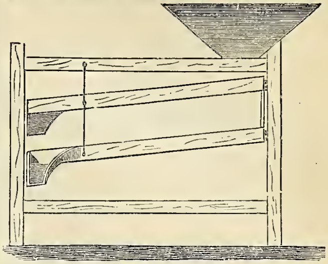


Fig. 2.—END VIEW OF MACHINE.

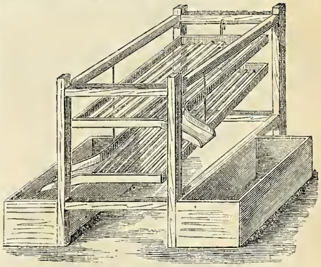
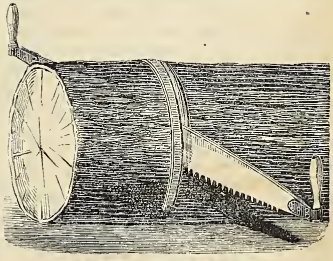


Fig. 3.—POTATO-SORTING MACHINE.

A Guide for Sawing Logs.

Some have asked for a method by which inexperienced persons may be able to saw logs, or shingle-blocks, square at the ends. It is very easy for beginners in the art of sawing to saw these uneven, and to do otherwise is almost impossible. There are several reasons for this: one is, if the saw is not set truly, it will run to one side; old sawyers, with great trouble, prevent this by constant pressure on one side of the saw. Another reason is that new sawyers can not keep the handles of the saw steady and upright, but permit it to "wobble" about, and at every "wobble" the cut goes to one side. But with a guide to lead the eye, almost any person can, by using care, saw a log squarely at the ends. Such a guide we have occasionally improvised for "greenhorns" at sawing, by taking a flat hoop of a flour barrel, and tacking it to the log with two shingle nails, as shown in the illustration.


LOG, WITH GUIDE FOR SAWING.

Then a narrow cut should be made on the top of the log with the ax, for a starting point, and with a saw properly set and sharpened, it will be easy to follow the guide and saw a square cut.

Hay Beds, or Rigging—Be Ready.

Now is the season for making hay beds, or racks, for use in the hay harvest. If delayed later, the hurry of the haying will be so pressing that there will be no time then to make preparations. We here give illustrations of two kinds of hay beds, which are easily made, and are very handy in use. For that shown in figures 1 and 2, we are indebted to Prof. Geo. Morrow, of the Iowa Agricultural College. It is the invention of the Farm Superintendent of that institution. It is made of light timbers, put together with carriage bolts, and has curved guards to cover the wheels. The chief feature of this bed is the tapering frame at the bottom, which permits the front wheels to turn very sharply. A standing rack, shown at figure 2, is fixed to the front, both to help support the load and to hold the reins while the driver is loading. At figure 3 is shown a form of rack common in some parts of the country, and this is probably on the whole the lightest, strongest, and best of any in use. It consists of a bottom frame, upon which two boards may be laid, a front and hind cross-bar raised by sloping standards, and from these bars to others beneath the bed, are bent laths, which act as guards over the wheels.

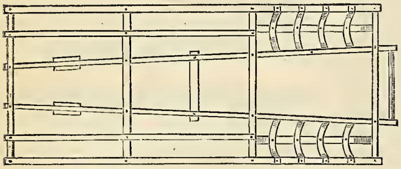


Fig. 1.—IOWA HAY RIGGING.

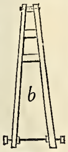


Fig. 2.

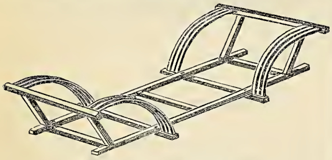


Fig. 3.—COMMON HAY RACK.

Pure Milk for Villages.

One of the family troubles with those who live in villages, and especially in those where the population is chiefly employed in factories or workshops, and where the amount of money to be spent for the family supplies is very limited, is the very unsatisfactory quality of the milk. Now there is nothing more important to the welfare of a family of children than the purity of the milk they use. Nothing more certainly carries with it unwholesome or poisonous taints than milk. The taints of typhoid diseases have, in many well authenticated cases, been carried from the family or house of a milkman, to those of the consumers of the milk. Hundreds of deaths in the outskirts of the city of London, in England, were not long ago traced to impure or infected milk, and in one notable case, 70 deaths from this cause were proved to have occurred from typhoid fever, carried from a farmhouse with the milk, to a large school. This is but one, although the worst, of the unfortunate results of the use of bad milk. To procure milk fit for the food of young infants, is always difficult, and in many cases impossible, under the present system of milk supply in cities, towns, and hamlets. Rural villages are no better furnished than large cities; but those are not so unfortunately situated as regards a remedy as the cities and larger towns. A system of milk supply, brought into operation in a small manufacturing town in England, during the past five or six years, offers an interesting example of what may be done in similar cases here. The village of Beckwith, in the northern part of England, is inhabited chiefly by colliers who work in the adjacent coal mines. Previous to 1871, the supply of milk in the village was both deficient and defective, and disease and mortality amongst infants and children were very frequent. In 1871, the owners of the principal colliery, with a view to benefit their work people, procured some cows and established a dairy on novel principles. A milk-route was opened, and the milk-wagon stopped at appointed places, at stated times. At these times and places, milk was delivered to the customers who called for it, the price being 5 cents a quart. The cheapness should be noticed, as reference will be made to this with other matters presently. The demand for the milk at once exhausted the supply, the children coming in crowds with their cans to the delivery places. The sales of the milk the first year, were over $2,000, increasing to nearly $3,300 in 1875, when 22 cows were kept, and in the latter year the average income from each cow was thus nearly $160. The dairy is stocked with Short-horn cows, as these, when dry, are readily turned into beef. We might here add, as our own experience, that cows of this breed furnish the most palatable and satisfactory milk for such a dairy, and whatever may be the advantages of other cows for other purposes, none can compete with Short-horns for the milk dairy. The management of the dairy, as may be expected from the results, is of the best kind, the cows being well fed and well cared for. The following figures, the account of the dairy for 1875, should be well noted:

RECEIPTS.	
Milk sold at 5 cents per quart	$3,282.83
4 cows sold	465.00
11 calves sold	110.00
One bull sold	157.50
	$4,015.33

EXPENSES.	
Rent of 34 acres pasture	$ 412.50
34 tons of hay, @ $30.00	1,020.00
Meal	180.00
Grains	315.00
Keep of horse	65.00
2 cows purchased	320.00
3 cows purchased	270.00
Bull purchased	315.00
Wages	650.00
Interest on capital, at 10 per cent	284.00
Balance profit (191.83)	183.83
	$4,015.33

These figures are interesting, because they go to show that a similar enterprise could not fail to be successful here, if managed only moderately well. It will be observed that the expenses include a balance of $330 for purchase of stock, over and above receipts for sales; that the rent of pasture was about $12.50 an acre; the cost of hay was very high, as compared with that prevalent here, and that the allowance for interest was ample, and that the profit in addition was respectable. If all this could be done, in this case in England, it is not easy to see why it could not be even surpassed here. Certainly, our rural villages ought to be supplied with pure milk, at the very reasonable rate of 5 cents a quart, and a handsome profit left to the dairyman, who would have the enterprise and skill to manage it. Otherwise a coöperative dairy might be established profitably.

Legal Protection for the Dairy Interest.

A bill was some time ago introduced into the New York State Legislature, by Senator Starbuck, of Jefferson Co., entitled: "An act for the protection of dairymen, and to prevent deception and secure fair dealing in sales of butter and cheese." After various amendments have been made, the bill provides that any article manufactured or sold in semblance of butter or cheese, that is not made wholly from milk or cream, but into which animal fat or oil enters as a component part, shall be distinctly and durably labeled "Oleo-margarine," and that all cheese made from milk deprived of cream by skimming, shall be labeled "Skimmed Milk Cheese." It is hoped that this bill will become a law, with the necessary amendment noted below. It is what the *American Agriculturist* has advocated for years, or from the very first appearance of "oleo-margarine" as a *fraudulent* substitute for butter, and as a *fraudulent* substitute for cream in cheese. We emphasize the word "fraudulent," because many interested in passing off the substitute upon unwitting persons, have pretended that our objections were directed against the substance itself, and not against the fraudulent use of it, and its unfair competition with pure dairy goods only. There can be no possible objection to the manufacture and sale of oleo-margarine in an honest way, and none against the purchase and use of it by any persons who are inclined to it as an article of food, or for preparing food. But the objection lies wholly against the sale *as butter*, of something that is *not butter*, and wholly inferior to it in value, at a low price, both on the general principle that it is a swindle of the public, and that it positively depresses the market value and deteriorates the legitimate character of butter. The dairy interest has suffered greatly from this fraudulent competition of an article that cannot stand upon its own naked merits, but only when clothed in the guise of dairy butter, or full milk cheese. If people wish to buy a tub of fat, distinctly labeled "Oleo-margarine," or a box of cheese with the label "Skimmed Milk Cheese" plainly before their eyes, no harm is done to any one, and we should be the last to question the propriety of every person doing as he pleases about it. It is the foreign market, which opened so auspiciously for American dairy products, that has been flooded with the fraudulent butter and cheese, and the term "American," as applied to these false dairy goods, has become known as a brand covering a quality fit only for the very poorest trade. A vast injury has been done to the American dairy interest in a quarter where it will be very difficult to counteract it, and many years will hardly suffice to restore the good name of American dairy goods in the foreign markets, in consequence of this deception. The various dairy Boards of Trade must see to it that this law, if it should be enacted, (of which at the present writing there seems some doubt, from a useless and embarrassing clause in it, forbidding railroads to carry illegitimate goods), shall be enforced, watching especially the foreign markets, and tracing any infringement to the perpetrators. It is not to be expected that so profitable a business as selling cheap tallow for costly butter and cream, will be relinquished without a struggle; but if dairymen permit it to continue, to their detriment in profit and reputation, while there is a law to protect them, there will be no blame but to themselves.

Lessons from Russian Agriculture for American Farmers.

We recently referred to the fact that the Russian Government had bought a great number of American plows for shipment to the wheat growing regions of Southern Russia. We understand that large purchases of other implements and machinery, including portable engines and thrashing machines, are contemplated, and that a Russian agent is investigating the merits of various machines for the purpose of selecting the best of them. All this shows that the Russians do not intend to give up the foreign markets for wheat which they have held so long, without a struggle, and that if we, who have been able to undersell and displace them from these markets, do not meet them with equal enterprise, we may be compelled to relinquish the advantages we have gained. Now it is well that we should know something of the agriculture of the people with whom we are brought into so direct competition, and this we may learn from the returns collected by the British Board of Trade, and recently published, relative to Russian agriculture. These returns, although published in the volume for 1876, refer to statistics of the crops of 1872. They are, however, of great value in their present relation, because little or no change has occurred since that year, which was an average season. The area of farms in Russia amounted to 1,244,367,351 acres, of which 527,426,510 acres, or nearly one-half, are covered with timber. As to the crops, the following tabulated figures are given, viz. :

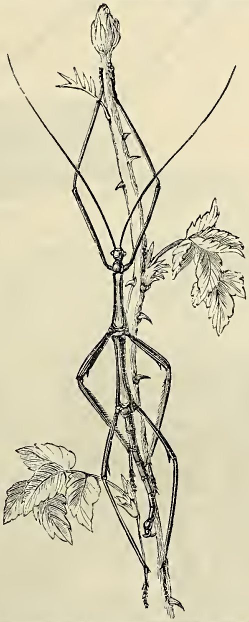
	Acres cultivated.	*Bushels produced.*	*Aver. ⅌ acre.*
Wheat......	28,743,390	157,938,000	5½ bushels
Barley......	15,511,600	124,753,750	8 ..
Oats........	32,818,890	543,622,750	$16\,^{6}/_{10}$ ..
Rye.........	66,398,540	546,832,000	$8\,^{2}/_{10}$ ..
Buckwheat..	11,307,660	86,256,000	7½ ..
Potatoes	3,169,010	370,876,000	117 ..
Grass.......	143,511,940	....	....

The average crops, with the exception of that of potatoes, which surpasses our average, are seen to be much less than ours, or less than one half; wheat being very low. Our ability to compete with Russian farmers is thus seen to consist in our larger crops. But if by better farming, and the use of labor-saving machinery, they can double their product, our occupation is gone as caterers for the bakers and bread eaters of England, or in fact of any portion of Europe. We shall then lose our only foreign market for wheat, and this is a very important thing to us, for if our surplus product is thrown upon our own market, already flowing over the brim and escaping, and shut out from foreign countries, to what a depth of unprofitableness will prices sink. Nothing but an even balance between supply and demand keeps values at such a level that the producer's labor is properly paid for. If we have one-fourth or one-third of our whole product seeking a market which cannot be found in our great mercantile centers, what then will fix the value of wheat, and with it of all other grains, and many other products? Nothing certainly but the will of the buyer if one can be found, and the poverty, but not the will, of the urgent seller.

There are some considerations involved in this question which are of great importance to us. If the Russian farmer, by the use of our methods, produces more bushels per acre, and therefore cheaper grain, can we do the same by our product? Can we by better farming double our average, and therefore reduce the cost of wheat nearly one-half, and produce some other crops on the ground that can thus be spared, so that we may not overstock the markets of the world? If so, what other crops can we produce? Is there any better way of meeting this certain dilemma than to direct our attention to the rearing and feeding of cattle, and, by means of this, so add to the fertility of our farms that we can reach an average of 27 or 28 bushels of wheat, and 75 of corn per acre, thus enabling us to turn half of our fields to pastures, or to roots or fodder crops, wherewith to feed more stock, and fertilize our more prolific soil? These questions are worth thinking over and discussing.

A New Enemy to our Forest Trees.

A most singular case of damage to forest trees was brought to our notice last summer by a letter fom W. C. Snow, Esq., of Yates Co., N. Y.; since then, we have had the pleasure of meeting Mr. S., and learning the particulars more in full. We speak of the case as singular, as the damage is caused by an insect not usually regarded as destructive, and is, so far as can be learned, limited to his immediate neighborhood, and mostly to his own woods. The insect in question is popularly known as the "Walking Stick" or "Stick Bug;" it belongs to the same family of insects (*Orthoptera*) with the grasshoppers and locusts, and is known to entomologists as *Diapheromera femorata*, and in some works as *Spectrum femoratum*; it is shown in the engraving, of a rather smaller size than the full-grown insect, which is three to four inches long, with long slender legs, and being of a brownish color, it has when at rest much the appearance of a twig. When young, the insects are greenish, but as the new growth of the trees changes from green to ripeness, these insects, according to Mr. S., change color also. Generally, these insects are not at all common, though from their form and color, they probably often escape notice. We have rambled the woods rather extensively, in different parts of the country, and do not think we have met with, except in Texas, an average of more than one or two in a year. Mr. Snow has 49 acres of wood, mostly second growth of hickory and several species of oak. In 1874, the first year after he went to live on the farm, the insects, the Walking Sticks, appeared in such numbers as to denude of their foliage, as he estimates, the trees upon some 25 acres. In 1875 they appeared in comparatively small numbers, and did but little damage; last year, 1876, they were worse than two years before, covering the same area, and to a rather greater extent, as he estimates that the trees on some 30 acres were stripped of their leaves. They prefer the black, red, and rock-chestnut oaks, to the white oak and hickory, which they molest but little, and only after the other trees are stripped. So thorough was the work of these insects, that from a distance the woods appeared as if a fire had gone through them. Their destructive work commences to be visible about Aug. 1, and continues until they are stopped by the frost. The insects appear to keep together in a body, going from tree to tree, and though a few were scattered about the orchard and vines, no damage could be traced to these. Their numbers, according to Mr. Snow, are almost beyond comprehension; they cluster upon a limb or fence-rail so thickly that they pile up upon one another, and one can not enter the wood where they are, without having numbers of them upon his clothing. The injury to the trees by the invasion of 1874 was manifest in the death of many of the branches that were stripped by the insects, and Mr. S. fears that many trees will succumb altogether to the more severe visitation of last year. The standard works upon insects give almost no information about the Walking Stick, not even describing their manner of breeding; one says that they live upon leaves, that "they have not proved so injurious as to particularly attract attention"—a statement with which Mr. Snow's experience is widely at variance. It is certainly most curious that an insect, elsewhere regarded as rare, should appear just in this limited locality in such force as to be astonishing by their numbers and their destructiveness. We are not aware if the great State of New York affords a State Entomologist, but if there is such an officer, here is an excellent opportunity for him to do useful work—in tracing the habits of this insect, and in suggesting the means for staying its progress. We call attention to this case in the hope of calling out information. If any readers have knowledge of similar ravages, or any experience in the destruction of the insects, we hope they will communicate it.


THE WALKING STICK.—(*Diapheromera femorata.*)

A Self-Closing Salt Box.

"J. A. W.," Mount Hope, Wis., sends a sketch of a salt-box with a self-shutting lid, that can be easily opened by horses or cattle. This is shown at figure 1. The lid has a rod or board attached to it, which is weighted, so that the lid will easily open when touched. The animals soon learn to lift the lid and reach the salt, and when they have supplied their wants the lid closes of itself again. To prevent it from opening too far, a strap or cord is fastened to the lid, as shown. A method of attach ing a salt-box to a horse's feed trough, is shown at figure 2. This lid is easily opened by a horse and being kept from opening too far by the cord, shuts itself when the horse withdraws his nose.

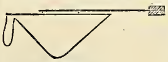


Fig. 1.

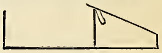


Fig. 2.

Lawn Mowing Machines.

One need not be very old to recollect when a lawn mower was a rarity; here and there an imported machine was in use, but those who had lawns, generally cut the grass with a scythe. We do not know exactly when the first lawn mower was made in this country, but the first one we saw, and used, was in 1867, and they can not have been made many years earlier. The development of this manufacture has been remarkable; several establishments have sprung up for making the machines, and the export trade in them is very large. While the English have made scarcely any improvements in their machines, our manufacturers each year find some point in which they can increase the excellence of theirs, and at the present time, the mowers of the best makers are as near perfection as we can expect to see in implements for the special work of mowing lawns. Our makers boldly place their machines in competition in England—that country of fine lawns—and their superiority to the cumbersome English machines has been so marked, as to overcome at once all national prejudices, and the testimony of the English horticultural journals is not only positive, but even enthusiastic in favor of American lawn mowers. As an indication of their popularity in England, we may mention that one house in London has a contract with one of our prominent makers, to supply them with a thousand machines yearly, for a term of years. Large numbers of our machines go to the continent of Europe, and recently considerable orders have been received from Australia. While we are gratified at this success of an American manufacture abroad, and are glad that we can help make the English lawns still more perfect, we find still more satisfaction in the fact that the perfection of the lawn mower has increased the number of lawns at home, by making it possible to keep them in order without too great an expense of time and labor. At present there are few places with an expanse of grass of sufficient extent to be called a lawn, where there is not a mower; indeed, so easily is the work done, and so effective are these machines, that it is no rare thing to find those who have but a mere city yard, clipping the grass with a mower. Not only has the number of lawns increased within a few years, but their character is wonderfully improved. For a great part of the season, frequent mowing is beneficial, and unless the lawn is very large, it is merely a pleasant exercise to run over it with the machine every week. In parks and large places, the surface is too great for the hand mower, and to meet the needs of these, the manufacturers supply horse and pony machines by which the work may be done very rapidly. "Which is the best lawn mower?" is a question that is often asked. Some very puzzling questions are put to us, and if asked, which is the best mower and reaper—which the best seed sower—which the best sewing machine—and which the best lawn mower, we are obliged to say, "We do not know." With these machines, and others we might name, improvement has so followed improvement, and several are so near perfect, that if there is really any choice between them, it is founded upon differences that are of no great importance. Each person thinks the machine he has, the best, and so it is for him, as he has become thoroughly acquainted with and understands its use. So in the case of lawn mowers, we can not undertake to say which is the best, but give illustrations of the two leading styles, with the claims their respective manufacturers make for them.

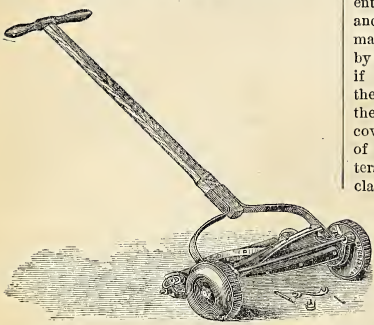
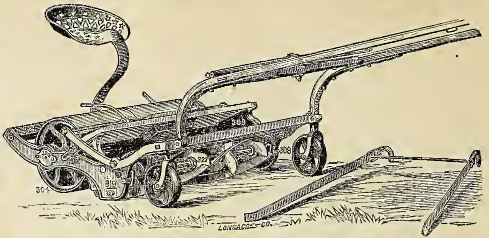


Fig. 2.—THE PHILADEPLHIA LAWN MOWER.

The two lawn-mowing machines that, taking the large numbers sold as an indication, may be regarded as the most popular, are the "Excelsior" and the "Philadelphia." The "Excelsior" is made by the Chadborn & Caldwell Manufacturing Company, at Newburgh, N. Y., where they have a very extensive establishment devoted to their production. The general form of this machine is shown in fig. 1, which represents the usual size. They make four different sizes of hand mowers, and several styles of large machines, to be operated by horse-power. This, if we mistake not, was the first machine in which the moving parts were covered, and the entrance of dust and other matters to the gearing thus prevented. The makers claim for their machine "great simplicity and durability." The "Excelsior" has a remarkable popularity in Europe, the demand for it in England and on the Continent being large and increasing. The "Philadelphia" lawn mower is made by Graham, Emlen & Passmore, Philadelphia, Pa. The usual pattern is that shown in fig. 2, which is made of different sizes, to cut from 12 to 20 inches. This machine, as compared with the cumbersome affairs first introduced from England, looks like a mere toy; but when tested upon the grass, it will be found that the increase of weight, and multiplication of parts, do not, of necessity, add to the effectiveness of a machine. The popularity of this style is such that it requires about 5,000 to supply the season's demands. The same firm make other styles of hand mowers, some of them especially suited for city yards. The use of horse or pony machines is rapidly increasing; indeed they are indispensable in public parks, squares, and for private places, where the lawn is large. We give an engraving (fig. 3) of the largest Philadelphia mower. In this style the cut is 36 inches, and as the driver is provided with a seat, the labor is reduced to a minimum. Other styles of horse machines (fig. 4) are made, to be guided by hand, and especially adapted to hilly or uneven lawns, and to those where shrubs and other obstructions are numerous. As we have used lawn mowers of both the manufactures here described, it will naturally be asked which is the best. That is a question we are unable to answer. If one has either, and cannot keep his lawn in perfect condition, he cannot hope to find any machine that will allow him to do it. Both machines received awards at the Centennial, and no doubt the judges were as much puzzled as we are to decide between them.


LONGACRE-CO.
Fig. 3.—PHILADELPHIA HORSE MOWER, LARGEST SIZE.

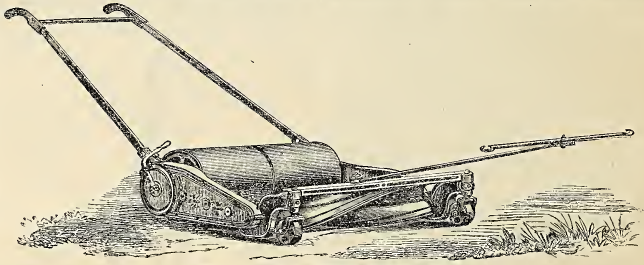


Fig. 4.—PHILADELPHIA PONY MOWER.

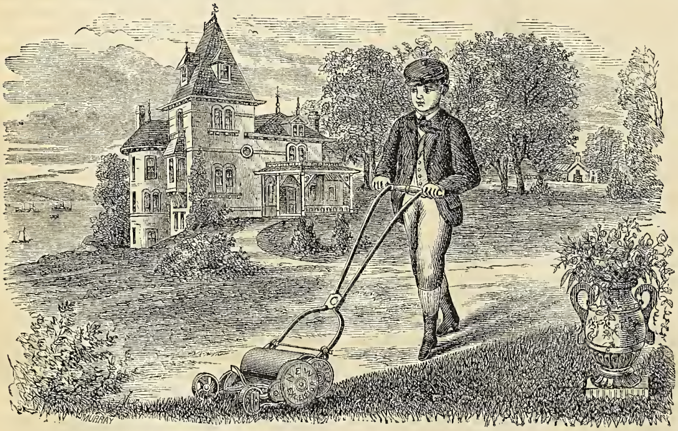


Fig. 1.—THE EXCELSIOR LAWN MOWER.

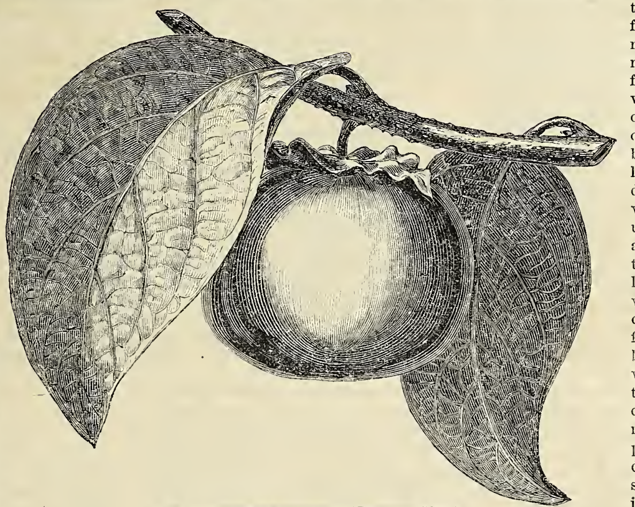
In the American mowers there is not, as a general thing, any provision made for collecting the clippings. If the mowing is done as frequently as it should be, to keep the lawn in the best condition, the clippings are very short, of young and tender grass, and as scattered by the knives, are soon so shriveled as not to be noticable; they remain upon the lawn to serve as a mulch to the grass roots, and at length by their decay go to fertilize them. Of course, if the grass has been allowed to grow too high, the clippings must be raked off; they answer admirably to mulch strawberries, or other plants, or if in sufficient quantity, may be cured. Hay made from lawn clippings should be kept by itself, to afford a treat to milch cows in winter.

Whichever machine is used, what is popularly known as "elbow-grease," is required; but the consumption of this may be greatly reduced by the proper application of another kind of grease, in the form of oil, to every bearing, or other part where there is friction. In dry weather, the rapid motion of the knives stirs up a great deal of dust, and the injunction placed on some machines, in large letters: "Oil frequently," should always be observed.

Notes from the Pines.

Spring Flowers–New Japanese Persimmon, and Other Horticultural Matters.

What is there in writing "in the first person I," that seems so attractive? I write articles editorially on various topics, and it is but occasionally that any one asks to know more about them; but the moment I write from "The Pines," about matters of no greater interest. I am in the receipt of letters thanking me for this, wishing to know where that plant or article may be had, asking for further explanation, etc. It has long been no secret that "The Man at the Pines," the title many correspondents have adopted, is the Managing Editor of the *American Agriculturist*. I commenced, "Notes from the Pines," for the reason that writing in the first person, allowed of a more free and colloquial style, and enabled me to bring under one head numerous odds and ends that were not of sufficient importance for separate articles. The "Notes" have brought out many pleasant letters, and I have thus become acquainted with readers who would never have thought of writing to "THE EDITOR." They have of late been discontinued for but one reason: writing in this familiar style requires more space to describe a plant, or an operation —in short, to give the same amount of *matter*, than the more concise style adopted for editorials, in which superfluous words are expunged, and only compact and "solid chunks of wisdom" are allowed. As many have kindly asked, "what has become of the Man at the Pines," and have indicated a desire to hear from him, I resume the "Notes," without, however, promising to supply an uninterrupted series.



THE JAPANESE PERSIMMON.—(*Diospyros Kaki.*)

Bluets–Houstonia.

Did it ever occur to you that much of our attachment to the home of our youth is due to the early spring flowers of both the garden and the woods and fields? Few are so dull as not to be impressed by the change of seasons, and the most striking of all the changes, from winter to spring, is so distinctly marked by the appearance of the early flowers, that even those who care nothing (or affect indifference) for flowers in general, notice, and are even pleased with, the very earliest. In each locality there are a few flowers that are always first, and in our rambles as children, we look upon these as sure tokens that winter is at last over. If, in after life, we live where the early flowers are different, the season never seems the same; spring comes, but it lacks something of the old charm; there are early flowers everywhere, but the advance guard of the floral procession is changed. The other day a young friend brought in a clump of "Bluets,"—but he brought in more than that; he did not see the dim forms of long ago that the little tuft of this most charming of spring flowers made visible to me. After the May-flower, or Trailing Arbutus, this was my special spring flower of boy-time. Indeed it is much more fresh and spring-like than that, which, beautiful though it is, has a kept-over look in its foliage which detracts something from the beauty of its flowers. The good Professor Bailey, writing one spring from West Point, and enumerating the early flowers he had found, remarked that he did not enjoy these, as he sadly missed the Bluets so plentiful around the town which was the birth-place of both of us. I took up a fine sod of the plant, boxed it, and by great good luck—for we had no expresses in those days — it reached him. I wish I could put my hand upon the letter in which he acknowledged the receipt, that you might see how a learned professor, of world-wide reputation, could be in ecstacies over this little flower that he loved as a boy. While the plant has a wide range—from Canada to the Gulf—it does not occur everywhere. It grows most plentifully in moist places, usually forming very dense tufts. The slender stems are from three to six inches high, somewhat branching, and having small, pale-green leaves; each little branch is terminated by a small, 4-parted flower, sometimes almost pure white, but generally with a tinge of blue, and occasionally distinctly, though delicately, blue, which is darkest when the flowers first open. The plant is sometimes so abundant as to completely cover patches several yards across. The engraving gives a good idea of the appearance of a luxuriant clump. With us, near New York, it blooms in early April, sometimes in March, and continues until the summer drouths come, though it is never so fresh and pleasing as at first. The name "Bluets" is perhaps more positive than its color will warrant, but is vastly preferable to another common name sometimes given — "Dwarf Pink." The delicate little thing has had a hard time at the hands of the botanists, who have given it various names, some of which, as *Oldenlandia*, were out of all proportion to the size of the plant; fortunately they have found that it may properly retain *Houstonia*, which was given in honor of an English botanist, Houston, and its specific name, *cœrulea*, refers to its bluish color.

A CLUMP OF BLUETS.—(*Houstonia cœrulea.*)

Cultivating the Bluets.

If this little spring flower had been sent from Japan or some far off place, how popular it would be! As is very often the case, it is much more frequently cultivated in Europe than at home. Indeed, I never saw it in cultivation, except on my rock-work, where, though it gets very dry in summer, it has flourished for several years, in company with the pretty little Early Saxifrage. It is a capital house plant; take a moderate-sized seed-pan, or other dish of similar shape, neatly fill it with a clump of *Houstonia*, and give it water as needed, and it will last for months. There may be some prettier household ornament, as easily achieved as this, but I do not know what it is....Just now there is some interest manifested in

The Japanese Persimmon, or Kaki,

which has fruited in California, where it is being largely advertised, and I notice that Messrs. S. B. Parsons & Sons, Flushing, N. Y., offer it on this side. The tree was introduced into New York by Thomas Hogg, who, some ten years or so ago, sent to his brother, Mr. James Hogg, several good-sized plants; and I think a lot also went to Washington about that time; several small trees were given me by Mr. H., in about 1870, and they were in the hands of others in different parts of the country. One of Mr. Hogg's trees bore, and I had the pleasure of testing the fruit, and at the same time the drawing was made for the engraving on page 221. Since then the tree has been introduced into France, where it flourishes, and has fruited. The winter of 1873–74, so destructive to many plants, put a finish to Mr. Hogg's trees, as it did to mine; this should not by any means be cited as evidence against its hardiness, as in that winter old native trees of undoubted toughness were killed outright. In Japan they have numerous varieties, differing in the size, shape, and color of the fruit. The specimen given me by Mr. Hogg might readily have been mistaken for a tomato. In taste it reminded me something of a fresh fig, but of a more positive character. I am glad that the agitation in California has directed attention anew to this Persimmon, as I feel quite sure that among the many varieties in cultivation in Japan, some will be found useful in our climate. The tree itself is a pleasing one, assuming a graceful form, with strong, healthy foliage, and when set with ripe fruit, must be a most brilliant object ...I have often referred to

The Cordon Training of Fruit Trees.

To an enthusiast in horticulture, nothing can be more interesting and instructive. It is wonderful how completely a tree can be shaped to one's will, and to see the results that follow a mere pinch with the thumb and forefinger. Of course, it is "agin natur" to make trees that would grow tall and upright, stay short and horizontal, and to divert one from making a straight trunk into growing with a spiral one. But to thus violate "natur," and work "agin" it, you must observe the laws of growth, and really all the time work *with* nature. Those who have the time, including young people, and not omitting girls, will find a few peach, pear, or other trees, trained in one of the several styles, to afford a most pleasing occupation. Had Pope been well up in the refinements of horticulture, he would have written, "Just as the shoot is pinched, the tree's inclined," for the training is all a series of pinchings; the aspirations of the tree are so persistently snubbed, that it soon is disgusted, gives up attempts at growing, and goes to bearing fruit. The account is too long for an article or a moderate series of articles in the paper, and a beginner needs to frequently refer to the directions, which are given more in full in Barry's "Fruit Garden" than in any other in our language that I have seen. Cordon training teaches one useful lesson:

The Work must be done at the Right Time,

or it can not be done at all. The neglect of a few days is difficult to remedy, while a longer neglect will spoil the whole, past remedy. Having been successful in establishing oblique and horizontal cordons, I undertook to train some peach trees in spirals; they were fairly formed the first year, but as I was away much last summer at the Centennial, the right thing could not be done at the right time; the result was, my spirals all went to top, and as a consequence went to the brush heap. Some of the trees in my horizontal cordon of apples looked poorly last summer, and I attributed it to the drouth. This spring I discovered it to be borers. The trunk being horizontal, and within about a foot of the ground, the parent borer placed her eggs where, had the trees been erect, they would have been 6 or 8 feet from the ground.....Probably no insect, at least none of modern times, has ever commanded so much attention as

The Colorado Potato Beetle.

It has found its way into the British Parliament; governments have proclaimed against it, and the arrival of a solitary "bug" was of sufficient importance to be "cabled" from Bremen. It is emphatically a "big-bug." Its fame has extended to another continent—for here is a letter from Africa, stating that potatoes there are preyed upon by an insect, and specimens are sent to ascertain if the genuine Colorado insect had carried the "war into Africa." On opening the parcel, I found they were not "Colorado," or even "beetles," but true bugs, claiming kinship with that sad but much-scented one of the squashes. This was sent so far that it had lost its scent, if it ever had one, though it took several cents in postage, when it started. In some remarks about our native

Erythroniums, or Dog's-Tooth Violets,

in April, it was mentioned that we had not succeeded with the imported dry bulbs of the European species (*E. Dens-Canis*), a plant I have had the greatest desire to see, but could never make the bulbs live, much less flower. Two or three years ago, a valued correspondent sent me from England, with a lot of other herbaceous plants, some bulbs of this, right fresh from the ground; these were put out near a rock-work, and quite forgotten. This year, I noticed some leaves, which I took to be very strongly marked specimens of our common native species, but when the flowers opened, there was a surprise indeed! After waiting and wishing these many years, here was the plant, and in flower, and no disappointment with it! Let those who know our common species, imagine the flower of a lively rosy purple, and they will not think me extravagant if I say that this was inexpressibly beautiful. The books speak of its being flesh-colored, and sometimes even whitish, but this in the way of color left nothing to be desired. It is perfectly hardy, having been in neglect for three winters. If the dealers will only import fresh bulbs, we can add a treasure to the list of hardy spring flowers. We have had this spring no less than

Four Erythroniums in Flower.

For beauty, our natives must step a little to one side and let me name this foreign one first; next, the common species, described in April, is most showy; more delicate, smaller, and somewhat later, comes *E. albidum*, with bluish-white flowers, and lastly, the new, very rare, and little known *E. propullens*, from Iowa; being a westerner, it has a great deal of push or go-ahead in its composition, and instead of multiplying, like the others, by making new bulbs close at home, by the old one, it sends out an underground stem several inches long, and starts a new colony there, if not further west, then in some other direction. Its flower is the smallest of all, not being a fourth the size of the common species, and much the color of *E. albidum*.

....The mention of multiplying, reminds me of the remarkable ease with which

The Prickly Comfrey Propagates.

This was described in January last as a forage plant of promise. Last fall Mr. C. E. Ashburner, referred to in that article, sent me a root which, with the top, required a barrel to hold it. The leaves were cut away, and the root left in the cellar, until March, when, wishing to try a few rows as fodder, we began to propagate, putting pieces of the root about four inches long into the sand of the cutting bench; then pieces two inches, then one inch long, were tried; then it was found that the chumps of root might be cut lengthwise, in halves, quarters, or less, and still grow; we found that bits, containing less than a cubic inch, if they only had a piece of the outside portion, or bark, on them, would make a plant. It is too late now to try how far this subdivision may be carried, but I have no doubt, that if chopped into pieces as big as a pea or a pepper corn, properly dried, and then sown in a gentle heat, every bit, with a fragment of bark to it, would make a plant. Should the Comfrey prove to be half as valuable as its advocates claim, it will become a standard crop, and it is well to know that it can be propagated so easily.

How Flowers are Fertilized.

BY PROF. ASA GRAY.

ARTICLE XIII.—LADY-SLIPPERS.

The agricultural papers naturally have a good deal to say about "fertilizers," and in popular botanical lectures and magazine articles, "the fertilizing of flowers" is much discussed. The readers of the *American Agriculturist* never get confused among these matters; but a case "down East," which we have just heard of, shows what may happen. A lecture upon the fertilization of flowers by wind and by insects, was given in the town, the local newspaper had reported it, and the matter was much talked about.—"Is it true," asked one of the citizens of a botanical friend, "is it really true that flowers are fertilized by the wind and by insects?"—He was assured that it was so.—"Well, I should not think that bees could ever carry manure enough to amount to anything, or the wind either."—Here

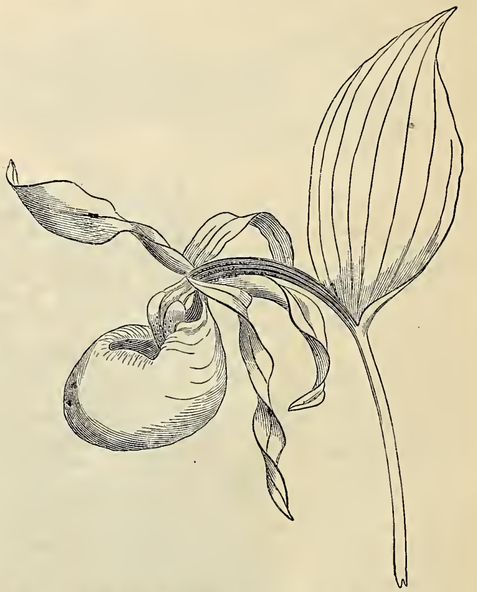


Fig. 1.—LARGER YELLOW LADY'S SLIPPER.—(*Cypripedium pubescens.*)

the new wine of cross-fertilization, had somehow got into the old bottle intended for guano and the phosphates, and it worked badly.

All the new interest in the subject that we have in hand, began over a dozen years ago, with the publication of Mr. Darwin's little book "On the Various Contrivances by which Orchids are Fertilized by Insects," which was published in 1862. This year the author has brought out a new and revised edition; and this is re-published here in New York, along with the whole series of Mr. Darwin's works, by D. Appleton & Co., so that every one now can obtain it. The old edition had long been scarce, and was never printed in this country.

Having illustrated, from other families of plants, many of the very various contrivances for ensuring cross-fertilization, and having shown what the use and good of cross-fertilization is, it is fitting to give some account of how this is done in orchids—a family in which these contrivances are the most elaborate and special. However it may be with other flowers, it is agreed on all hands that these can not get on without the aid of insects. That is, as a rule, for Nature seems to delight in exceptions, and a few orchid-flowers are adapted to self-fertilization, while as to most this is a sheer impossibility.

With Darwin's new book in our hands, and we trust in those of some of our readers, we may hope to show what a few of these orchid contrivances are. Considering that we are just in season for Lady Slippers, they will best serve for the present article. These form a peculiar tribe of orchids; and the contrivance for fertilization is equally peculiar.

Figure 1 shows a flower of the larger sort of yellow Lady's Slipper, which usually blossoms in June. Figure 2 is a section of the slipper of the early spring species, *C. acaule*, the stemless Lady's Slipper.

What we call a slipper—and which has better been likened to a buskin, or an Indian moccason, is in fact a trap, after the fashion of one kind of rat-trap, the edges of the opening being rolled in, so as to facilitate entrance but hinder return. This acts more effectually than one might suppose. For, on throwing in flies, we find that they seldom get out of this opening, large as it is in the yellow and white Lady's Slippers. In the stemless species, the opening, although long—occupying the whole front of the pendent sac—is nearly closed, the in-rolled edges of the long slit being brought loosely into contact. The central part of the blossom, which curves downward and covers the upper part of the mouth of the trap, consists of stamens, style, and stigma, covered by a spade-shaped body, which answers to a stamen, as the botanists say, but is a useless one, as it has no pollen. Underneath is the broad stigma, which faces partly backwards. It is best seen in the sections, figures 2 and 3. Underneath, a little further back, are the two anthers, one on each side, placed, as we shall see, "where they will do the most good." The bottom of the sac is lined with long and soft bristles, which appear to contain something attractive to flies. There is no honey in the slipper, no pollen can of itself ever fall on the stigma, or be conveyed to it by the wind. In fact, the pollen never falls from the anther of itself, for, although it appears like a damp powder, or like a soft pulp in some species, the surface is covered with a thin film of sticky varnish. This varnished surface adhers to the finger when touched, and brings away with it a patch of the pollen, of the size of the adhering surface.

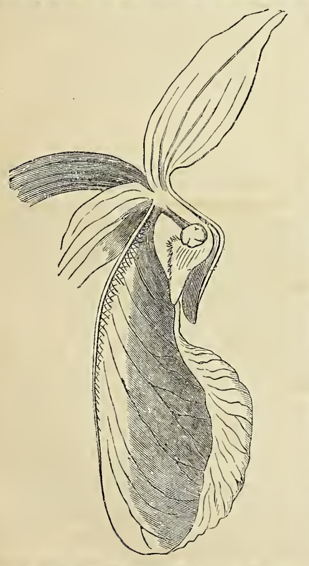


Fig. 2.—SECTION OF STEMLESS LADY'S SLIPPER.

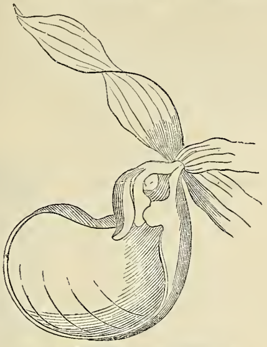


Fig. 3.—SECTION OF FIGURE 1.

Now, as to the fertilization, let us copy what we wrote about it in the *American Agriculturist* a dozen years ago. "The flower left alone would be hopelessly sterile. Although we have never seen an insect spontaneously enter the slipper and do the work, we are about as sure that the work is done in this way, as if we had seen it. Probably it is visited by nocturnal insects. The slipper may be entered by the orifice in front, which, in most species, offers the readiest access; or, from behind, by crawling under either anther, and thence under the stigma into the main sac. A large fly, or a coleopterous insect of corresponding size, entering from behind, would probably hit the back of his head or eye against one of the anthers, and as he crept under the stigma, might lodge some of it there. Feeding upon the hairs as he passed on, the front orifice would be before him for egress; but its incurved border would interpose some obstacle. It offers none to entrance; and we presume that the insect enters at the front, and passing onwards, departs by the back door. In departing, whether he turns to the right or the left, he must rub his head against an overhanging anther, and carry off a plaster of pollen. If he then passes to another flower of the same species, and enters it by the front orifice, as he proceeds towards the most practicable exit, he must crowd under the stigma, upon which he will hardly fail to deposit some of the pollen brought from the neighboring flower. Now, that this is really the way of it—that it is intended the insect shall enter at the instep and emerge at the heel of the slipper, and so bring the pollen of one flower to the stigma of another—is as good as demonstrated by the peculiar character of the stigma in this flower. It is not glutinous as in the other orchids, but only moist, and is rough to the touch. Under a microscope this roughness is seen to arise from the surface of the stigma being covered with projecting points, or what would be so if they were longer; and *these all turn forwards*, so that the apparatus may be likened to a rasp, or to a hand wool-card of the olden time; and one can not resist the conclusion that it is *intended to card off* and to retain the pollen brought upon the head of an insect entering at the front, and on its way to get out at the back part of the flower. A more ingenious and effectual contrivance for crossing the flowers of a species by the help of insects, could hardly be devised."

This is a different view from one which was taken by Mr. Darwin in the first edition of his book on orchid-fertilization. He had examined only some of the tropical species. But what we described as in all probabibity true, judging from the structure, is now a fact confirmed by observation. We have specimens in which a small insect perished on its way out, having got stuck fast to the glutinous mass of the pollen, which it was too feeble to carry away. Mr. Darwin, when this view of the case was pointed out to him, finding that the flies he tried upon yellow Lady's Slipper, were either "too large or too stupid," introduced "a very small bee, which seemed about the right size, viz., *Andrena parvula*." "The bee vainly endeavored to crawl out again the same way by which it had entered, but always fell backwards, owing to the margins being inflected. The labellum [slipper] thus acts like one of those conical traps with the edges turned inwards, which are sold to catch beetles and cockroaches in the London kitchens. * * * Ultimately it forced its way out through one of the small orifices close to one of the anthers, and was found when caught to be smeared with the glutinous pollen. I then put the same bee back into the labellum, and it again crawled out through one of the small orifices, always covered with pollen. I repeated the operation five times, always with the same result. I afterwards cut away the labellum so as to examine the stigma, and found its whole surface covered with pollen."—To complete the evidence, Dr. H. Müller found that this very *Andrena* which Mr. Darwin happened to try, and other species like it, did the work of fertilization naturally for the European *Cypripedium* in Germany.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

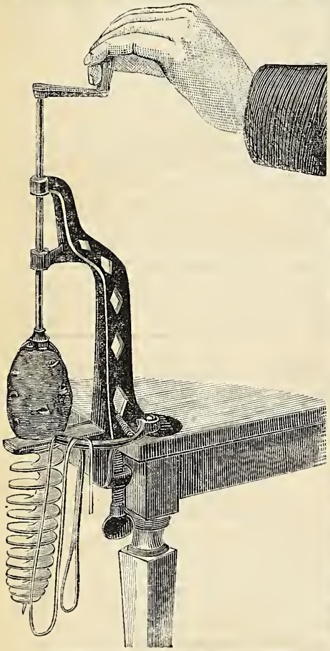
Home Topics.

BY FAITH ROCHESTER.

Fitness in Dress.

All acknowledge the propriety of putting on clothing suitable for the work in hand. Has every woman some work to do in this world? If not, why is she here? What right has she to food, and clothes, and shelter, and education, if she renders no service in return? Many imagine that they do the world sufficient service simply by wearing and exhibiting fine costumes—walking pictures, as it were; pretty ornaments for the landscape or the parlor. What do you think of the head and the heart of a woman who chooses that business as her work in the world? Did you read the article on "Daily Beauty," which appeared in the "Atlantic Monthly" many years ago? It was not written for "working women," but for those who could spend most of their time in carriages and in parlors. The idea was broached that the working women of America should be willing to wear a costume distinguishing them as working women, a sort of peasant's dress. Our leaven of democracy renders that impossible, in the way that the author meant. And yet I hope that we shall soon have a genuine working woman's dress, or a costume really suitable for a woman to work in; one that allows freedom of motion, easily made, and easily kept clean; and I am sure that when the "working women" adopt such a costume, no one will long be willing to belong to the other class, and continue the use of a costume more suitable for an Eastern harem than for Christian wives, mothers, and sisters.

How far shall we follow the fashion? Ruskin has been speaking to girls on the subject, in his oracular way, and he says they must make their new dresses in the prevailing style, and then wear them unaltered until they are worn out. But he says they must not use cloth to make great unnecessary bows, and bunches, and loopings, nor scatter bows and buttons about where they have no use and meaning. I don't remember whether he speaks of bustles, but I am sure sensible persons disapprove of them. But how in the world is a woman to make a dress in the prevailing style of some years past, and avoid all these outrages of taste? She must look sharp, or she will get some garment which demands a bustle to make it fit, and she will be a fortunate woman if she can dress "like other folks," and avoid meaningless loopings and trimmings. Oddity is unpleasant to the person who indulges in it—at least to a modest and affectionate person—and somewhat painful to such spectators as do not like to meet a person not modest and willing to conform to the public taste. When we see a person oddly dressed, we want to know the motive for such action, and feel relieved to learn that religious principles of some kind, prompts the deviation from the prevailing taste. But though social conformity, within reasonable limits, is right, let us never forget that Fashion so far is a mere pretender in office, having no just right to rule us; and she never will have a just right until she gives in her allegiance to principles of health and fitness, and neighborly love.



SARATOGA POTATO PEELER AND SLICER.

Dressing according to our Station.

Social position has something to do with deciding what we shall wear. It is a common rule that each must dress according to her station, and this very doctrine, perhaps, leads most people to dress beyond their means, in order thus to impress others with their social consequence. The hired girl does not desire to tell every one she meets, by her dress, that she is a "servant," neither do the poor wish to publish the fact of their poverty. So those who rank as the "lower classes," have many a lecture read to them about their wicked extravagance, and their folly in trying to dress like those above them. But the leaven of Christianity works on in the great lump of humanity, and class distinctions crumble away inevitably, and more and more do we draw near each other as members of one great family. It is not uncommon now, for the rich to help to bear the burdens of the poor, by wearing plain and inexpensive fabrics themselves, thus making persons of smaller means feel comfortable at church and in general society. This is the law of love.

I have heard of a woman, now placed in the highest social position of any lady in the land, in a society where extravagance in dress is the bane of women and the ruin of men—a woman of such true womanly worth and strength of character, as to resist the strong allurements of fashion in her circle, and dress with uncommon fitness as a modest Christian woman and the wife of the President of a Republic, where all are supposed to be free and equal. I wish she could know how heartily many an obscure woman throughout the land thanks God for her good sense and courage.

The Care of Baby's Mother.

The baby to which we allude is not two weeks old. Let us suppose it to be not two days old, and speak as frankly as may be allowed in a journal designed for general circulation. If it is a well-behaved baby, its mother needs no other company, though of course she needs a sympathizing caretaker or nurse, and may enjoy the occasional cheerful faces of near and familiar friends. But *rest* is nature's great demand; rest from all exertion and from all excitement. So it is a mistake to talk much by the bed-side, or to read aloud, with the intention of diverting the patient. There is no sweeter cup of earthly bliss, than the tender, hopeful love of a mother for her new-born helpless, and innocent baby. So the best comfort you can give her is, such happy sympathy as may be in your power to give, besides the care she needs as a sick woman. The best thing for both mother and baby is all the natural sleep that can be wooed and won.

It is astonishing to think of the unnecessary fussing that was done over our grandmothers and their babies—the panada with "spirits" in it, supposed to be absolutely necessary for the mother; and all the teas necessary to put the infant's organism in working order—one thing to start the bowels, tea to stimulate the kidneys, one to improve the complexion, and half a dozen more to cure the troubles caused by the unnatural doses of both mother and child. If the baby is to draw its nourishment from the source Nature intends, it should begin the practice very soon after it is properly dressed, not, of course, until the mother feels somewhat rested. To feed it at first with a spoon, is to risk trouble for both mother and child, for the baby needs to learn the use of its tongue and lips, and the mother needs this natural stimulant for the proper adjustment of her organism. Still there may be times where it becomes necessary to feed the baby artificially, but such cases are rare. Nor is it usually necessary to stimulate the flow of milk. It does not often come until the third day, but the scanty fluid Nature gives instead, is just what the infant needs, rather than the teas of various kinds too often given. It is the safer course to avoid much fluid food and drink for a few days when the milk begins to come, it is so apt to be the case that the baby can not take it all, and trouble is sure to follow if the milk is not all drawn. When the babe has once become accustomed to its natural nourishment, and the supply is not too great for the demand, this caution gradually becomes unnecessary. The mother's food should be simple and nourishing, but not too hearty. Her food must feed two, to be sure, but need not therefore be more than enough for one, for Nature has made provision for the case in another way. By eating with a view to providing food for two, a mother will probably overtax her digestive powers, and injure the quality of the babe's food, without increasing the quantity. Enough food for her own good health, is all that is required, and this should contain all the elements needed for the growth of the babe.

Cleanliness and Light.

Cleanliness is not at all to be feared for the sick mother, but is greatly to be desired. There are at this day old-fashioned nurses, who keep a baby's mother's sick-room so foul with bad air, from lack of cleanliness about the patient, that few can bear to enter it. They refuse to change the bedding or the patient's clothes for at least a week—most barbarous treatment of mother and babe, and all the friends. There is no danger from changes of clothes, if the fresh clothing be well aired, and put on without chilling or fatiguing the patient. And washing of the whole body is not at all perilous, if the water used be of comfortable temperature, and the air of the room quite warm. Thousands of women every year have sitz baths before their babes are a week old, and recommend the practice; but though I know by experience that it is safe and comfortable rightly administered, I will not recommend it to any one who has not a nurse or physician accustomed to such baths, and ready to superintend them. Very serious disease sometimes results from lack of proper washing in sickness of this kind, in hot weather. Every sick-room should be kept as light as the patient's comfort will allow—not darkened at all, unless the light hurts her eyes. All reasonable efforts must be made to keep the air pure without chilliness or draughts.

Children's Under-Waists.

A reader of the *American Agriculturist* sends me some anxious inquiries about children's under-waists—how they should be made, and how low the lowest row of buttons may be allowed to come. She would like the same pattern that I use, and she is quite welcome to it, if she will get it in the same way that I do. Probably there are better patterns to be had from the regular pattern venders. I make an under-waist for any child under six years of age, in this way: I tear off a strip of cloth, cotton or flannel, as wide as the length of the child's waist, measuring from top of shoulder to hip, and as long as the loose "bust measure" of the child, allowing for wide hems in the back and room to button, and for a wide hem at the bottom. Having turned in the hems for lapping at the back, double the cloth in the middle, and again, so as to make "four-double," (fig. 1), the last made creases to come under the arms. Hold this up to the child's body, and cut roomy arm-holes where they ought to come, with triangular pieces cut out above the arm-holes, to make the sloping shoulder seams. When opened, the pattern will be as in fig. 2. For half a dozen years of its life, a child's body has no fixed form, and a waist made by this pattern, will be as likely to pinch at the bottom as higher up.

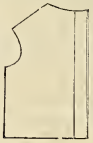


Fig. 1.

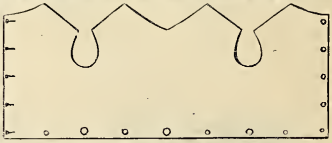


Fig. 2.—PATTERN OF CHILD'S WAIST.

The waist should never be "snug" in fit for a growing child—nor for any one who likes to breathe freely. Older children need some slope of seams below the arms, and when nearly full-grown, darts in front. Never let the waist be tight about the bust.

About the buttons about the waist, I am not capable of deciding that matter outright. It depends upon the comfort of the child, and the convenience of the mother. I have never used more than two rows of buttons on one waist, and those not more than an inch apart. The flannel under-suit worn in winter has no buttons, unless to fasten the upper and lower parts together. In this case, a strong cotton waist is worn over, to which the colored flannel "dress drawers" and flannel skirt are buttoned. When a pair of drawers, and a skirt, button to the same waist, I make but one row of buttons, but use alternate sizes for the separate garments, as shown in the diagram (fig. 2), the larger buttons supporting the drawers, and the smaller ones the skirt. This arrangement answers for summer as well as winter use.

A Potato Peeler and Slicer.

One of the essentials in preparing the choice fried potatoes now popularly called "Saratoga," is to have the slices of uniform thickness, so that they will cook equally. Various slicing machines have long been in use, but we have not had one that would both peel and slice until the one here figured was invented. It is called the "Saratoga Potato Peeler and Slicer," and is made at Antrim, N. H., by the Goodell Company. It is as simple as possible. A rod, with a crank at one end to turn it by, has at the other end projections to stick into and hold the potato. When the crank is turned, the potato is revolved against a fixed knife, which cuts it in a thin spiral, of uniform thickness, as seen in the engraving. While this is being done, a little knife of peculiar shape takes off the peel as a narrow ribbon, which is seen hanging to the machine in loops; this knife is self adjusting, and accommodates itself perfectly to the inequalities of the surface, even entering the depressions of the eyes. With a little care the potato, if not large, may be kept in one continuous spiral; if in one or more pieces the spiral may be closed up, bringing the potato, or part of it, to its original shape, and then by cutting from the central hole, out, i. e., cutting half way through, the slices will be separate; or, if large, the whole may be cut across, leaving the slices in half circles. In slicing with this, or in any other manner, the slices should be kept in water until wanted for use, or they will become discolored by exposure. One of our favorite ways of cooking potatoes is in the "Kentucky Style," or "Fricaseed," as some call it. This was described in October last, and is especially useful at this season, when potatoes are sometimes not at their best; this machine is exceedingly handy in preparing them for cooking in this manner. If one wishes potatoes, carrots, or other vegetables, shredded for soups or stews it can be done very neatly and uniformly, by first running them into spirals, and then cutting them down in strips. We hope that the inventor of this ingenious little implement, will turn his attention to giving us a machine that will easily, surely, and economically peel potatoes, without the enormous waste that the average Biddy is sure to cause. With potatoes at the present prices, one does not wish to be in doubt which is of the greater probable value, the potatoes or the peelings.

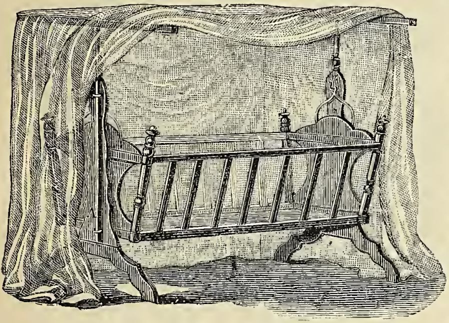


Fig. 1.—CRIB WITH MOSQUITO NET.

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Mosquitoes and Flies—Prepare for Them.

There are few places, at least few where one would care to live—that are quite free from mosquitoes and flies. City people seem to think that, as a matter of course, those wo live in the country must have half the pleasure of existence destroyed by mosquitoes, and usually the first question city folks put to us about our country home is: "do you have a plenty of mosquitoes?"—Then we have the grim satisfaction of saying: "We are not troubled by them one-tenth part as much as when we lived in the city,"—and it is the fact. All the annoyance from mosquitoes for all the ten (or nearly that) years we have lived in our present country home, has not been equal to that experienced in a single summer in New York City. In the one case we expected the enemy, and prepared for him. In the other we did not. It is so easy, with a moderate expenditure of time and money, to keep a house quite free from mosquitoes, and nearly so from flies, that we have but little sympathy for those who complain of either. The work may be done by any one who is handy with tools, at a much less expense than to employ a carpenter, but even in the latter case, the outlay is not large. Every door and every window must be furnished with a screen. If you think to economize by leaving certain windows unprovided, those will be the very windows that will be left open, and render the barriers of the rest of no avail. It is best to make thorough work, and from garret to cellar, provide each door and window with a closely fitting frame. Cheap frames, covered with mosquito netting, are better than nothing, but they are so liable to get out of order and to be torn, that if it can be possibly afforded, well made frames, covered with wire gauze, should be provided, as they will prove far cheaper in the end. Still, if these cannot be had, use the other, and make up by extra care what they lack in stability. The frames are often made to set under the lower sash, and can only be put in when the sash is wide open. A far better plan is to have them directly within the lower sash. The frame has on each side a groove, ¼-inch wide, and the same in depth; a strip of wood, ¼-inch square, is tacked to the inside of the window frame, at such a point as will keep the mosquito frame in the proper place. The groove of the frame slides upon this strip, and the mosquito screen is managed without any trouble. Any ingenious carpenter will arrange the details. Wire cloth can be bought in all the cities, ready painted. It may be of any color one fancies; we find a not very dark-blue, the color of which has been subdued with black, making a sort of neutral tint, as inconspicuous and pleasing as any. The doors, and above all the kitchen door, should have frames stout enough to endure the slamming, be provided with very prompt-acting springs, and be no wider than necessary. An ordinary kitchen door is usually wide enough to allow of a double screen-door, as for most uses, one half will be wide enough.

In a house properly provided with screens, no mosquito bars, or nets will be needed. Still, as there are cases in which, for comfort, the bed must be covered with a mosquito net, we give illustrations for some very simple ones. Those who go into the country for the summer, will often find that this article of comfort is not provided; such will find at the furnishing stores a variety of nets or canopies, that are portable and readily adjusted to any bed. Indeed, with a piece of mosquito netting, a few wires and light rods, it is not difficult to provide any bed with a bar. Figure 1 shows how a crib may be sheltered by the use of two light rods supported by strong wires which slip into staples attached to the crib. As scarcely any two cribs are of the same pattern, this attachment will need to be varied to suit the style. The net may be a simple large square piece, to hang gracefully at the corners, or the material may be economized by sewing it together to form a square box. The child's cradle or carriage may be provided in a similar manner. A mosquito canopy, such as is sold at the stores, is shown in figure 2, to give a hint at a similar home-made structure. A frame may be made of light strips of wood—probably the canes used for fishing rods could be used—and by means of wires or strong cords fastened to a central knob. This top is to be covered, and then the mosquito bar tacked to the frame, with plaits to allow of the needed fullness below. This should be open in but one place, and the breadths at this place should lap at least half a yard, to make sure that they will close securely. Such a canopy may be hung by a cord to a small pulley in the ceiling, or marring the ceiling may be avoided by the use of a supporter like that in figure 2, which is a strong arm of wood and heavy wire attached to the bedstead. Instead of this an independent supporter may be used; figure 3 shows one of the kinds sold, and will serve as a hint to devising something that will answer.

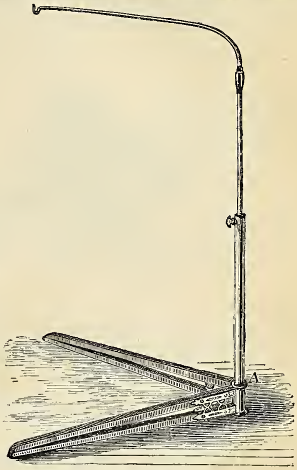

Fig. 3.—SUPPORT FOR CANOPY.

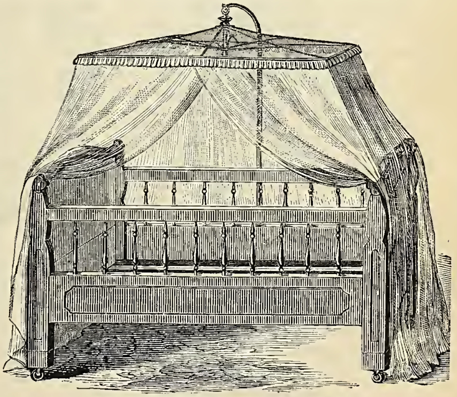

Fig. 2.—MOSQUITO CANOPY FOR A BED.

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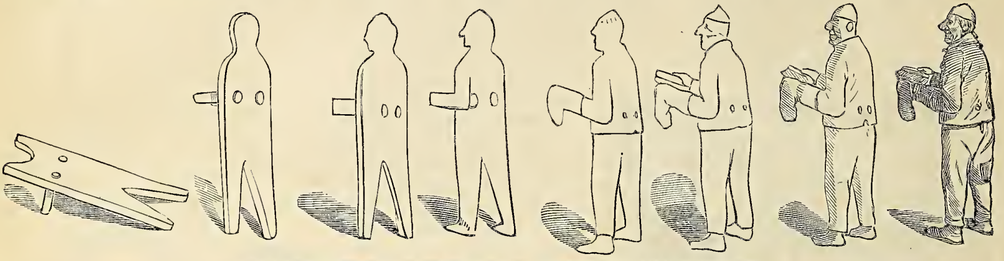
DOUGHNUTS.—By "Housekeeper." Set 2 or 3 tablespoonfuls of good yeast with a pint of warm water, add carefully sifted flour, sufficient for a sponge. Let it rise over night. In the morning cut up ½ lb. of butter in 3 pints of new milk—a little warm—pour it to your sponge, break in 3 eggs, add a little cinnamon, and flour enough to knead into dough. Let it rise until light. Roll out, cut into strips, and twist them, or make into rounds pierced through the centre. Fry in hot lard.

STUFFING FOR FOWLS.—"Housekeeper" says: "Slice a loaf of baker's bread, soak soft in sweet milk, and mash with a spoon; add 2 eggs, pepper, salt, summer savory, or thyme (powdered fine), a lump of butter, the size of a hen's egg. This will be sufficient for two fowls." Another way: Chop or crumble home-made bread fine, moisten with a little sweet milk, and to be enough for two fowls, add 2 eggs, 2 large spoonfuls of butter, 1 even teaspoonful each of pepper and powdered thyme, 2 do. of salt; mix well together.

BOYS & GIRLS' COLUMNS.

The Story of the Boot-Black.

This picture tells the whole story itself, and needs no explanation. Perhaps a boot-black might not like it, but then it is a great deal better to have had an humble origin, beginning low in the scale and working up, than it is to begin high and run down, as many a boy—and many a man too—has done, into something almost as senseless, and not near so useful, as even a boot-jack!



THE NATURAL HISTORY OF THE BOOT-BLACK, ACCORDING TO SOME NATURALISTS.

The Doctor's Talks—How Things are Done—Pins Here and There.

The other day I received from a friend, who lives near the shores of the Mediterranean Sea, in the south of France, a large parcel of botanical specimens, which you know are plants that have been carefully dried by pressing them between papers. Upon opening it, I found it

CONTAINED A GREAT CURIOSITY,

one which I was glad to see, because it is curious in itself, but because it reminded me of "old times," as it was something I had not seen since I was a child. No doubt some of you will think it is a fine plant from "sunny France"; others may guess that it is a brilliant sea-weed from the great inland sea; still, another will perhaps think it is some pretty shell that my friend had picked up on the beach. But you could go on and guess a great many things that it might be, without hitting the right one. The plants were laid between folded sheets of paper, and then all the sheets holding plants of one family—such as the ferns, or the grasses—were put together and wrapped, to keep them separate, in a larger paper, and each end of this wrapper was fastened by

AN OLD-FASHIONED PIN.

This pin was the thing that I thought so curious, and was glad to see! Perhaps you will think of the saying "as near alike as two pins," and wonder if there can be any difference in pins, except in their size and color, and that there should be such a thing as an "old-fashioned," as different from a new-fashioned pin, will no doubt be strange to you. Indeed, pins are in such common use, are so cheap, and so much a matter of course, that it is likely few, old or young, ever gave much thought to them. Forty years ago, pin-making was slow work, and before a pin was finished and ready to be sold, it had to go through a great many hands. In the first place, the wire was cut into pieces, each long enough for six pins; then a workman would take 30 or 40 of these wires, and keeping their ends even, bring them against a grindstone, where he ground each to a point; by keeping the wires rolling in his hand, he managed to point this number at once and all alike. The ends of these long wires being pointed, enough to make a pin was cut from each end, and the grinding continued to point the wires anew: the pointed ends being cut from these, the wires would be left only long enough for two pins; these were ground at each end, cut in two, and the workman was then ready to start with another lot of long wires, and go on as before—one man doing nothing but grind pin-points all his life. Here were the pins with points, but with no heads, and to make these and put them on, was the work of other men. First the heads must be made, and this was done by taking a piece of very fine brass wire, and coiling it closely around a steel wire the size of the pin; this made a coil like a spiral spring, which was then cut into pieces of two (sometimes three) coils each, and these were the heads. Each headless pin had its blunt end pushed into the hole in one of these pieces, and this was held in its place by giving it a blow with a small hammer; after a while an improvement was made by fixing the hammer to work with the foot. When the pin was finished, its upper part was like that shown in figure 1, which is magnified, to show its shape, and below is a view of the head as it appears when looked down upon. What slow work it was, when every pin, even the smallest, had to go through all these operations; in those days it could be said of even the smallest, that it took

FOURTEEN MEN TO MAKE A PIN!

This was the kind of pin in use when I was a youngster, and the kind that I found such a curiosity when I found them in the parcel from France. One of these French pins had its portrait taken, as seen in figure 1, which is not a "full length." I well recollect what bother they made by losing their heads, but the worst was, that in pushing a dull pin, or in thrusting one into some hard or thick cloth, the head, not being securely fastened, would slip, and the blunt wire would often be forced into the thumb, and hurt badly. With all their faults, these were the only pins to be had until about 40 years ago, as it was not until 1836 that

PINS MADE BY MACHINERY

came into use. A pin-machine is a wonderful thing. The wire passes into the machine at one side, from a reel upon which it is coiled—there is a great deal of clickety-click, and the completely made pins drop out at the opposite side, quite as fast as you would care to count them. You will agree with me that this is very wonderful, when you think that this machine of iron and steel does, and more rapidly, the work of a dozen or more men, with but one man to attend to it—indeed, one man can look after several machines. Not only is the work done much more rapidly, but much better. I can not describe the machine, but it works in this way: the wire, as it passes in, has a bit cut off of the proper length, this is held—by a "hand" of the machine itself—against a wheel that goes round very quickly, and acts like a file, which points the pin; then the piece of wire goes to a *die*—a piece of steel of the right shape, where the blunt end is powerfully squeezed, to make the head, and when this is done, the pin drops out, all complete. Pins thus made are solid-headed, all being in one piece, as in figure 2, which shows the upper part of a pin, and below is the head as it appears when you look down upon it. You see that the head can not slip off and get lost, or be pushed off to the injury of the hand, because it is a part of the pin itself. You can understand why these old-fashioned pins interested me, as they reminded me what a great improvement had been made in one of the conveniences, if not one of the necessities, of every-day-life. I do not know if pins are still made in the old way, or not, in France, but I presume that they are, as those which came to me looked bright and new. We may take pride in the fact that this great improvement was made by an American, or rather several Americans, for several worked at the pin-machine before it was as perfect as it is at present. How much thought and study it must have taken, to so fix and shape iron and steel that it would perform such delicate operations better than many hands! But there are some other things you would like to know about pins. They are made of brass wire (some very poor ones of iron wire), and yet they are white, and you wish to know how they are made so. When the pins drop from the machine, they are put into a barrel, which is fixed to turn rapidly on its axils; some saw-dust is put in with the pins—pecks—thousands of them, and the barrel set to whirling; as this goes humming around, the pins get a terrible shaking up; they rub against one another and against the saw-dust, until after a while they are scrubbed clean and bright. Then the pins are put into large kettles, a layer of pins, some plates of block or pure tin, more pins, and more tin plates, until the kettle is full. Water enough to cover the pins is put in, with a little nitric acid, and the whole set to boiling; after they have cooked for about three hours, the pins will be found to be no longer brassy, but quite white; the acid has dissolved a little of the tin, and then deposited it upon the pins, so that each one is covered with the thinnest possible coating—a mere film of tin. This, thin as it is, answers very well, for you know that pins will stand a great deal of wear before they show that they are of brass. The pins go from the kettles into the barrels again, with hot saw-dust, and they are whirled and tumbled over for a while, when they come out bright and polished, and ready to be

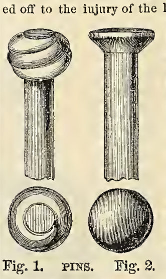


Fig. 1. PINS. Fig. 2.

STUCK INTO THE PAPERS.

For some time after pins were made by machinery, they were put into the papers by the hands of children, but this was too slow altogether. When a machine is needed in this country, it is very sure to come, so a pin-sticking machine was invented, then another, until at last the needed machine was produced, and the one now used, also invented by an American, is even more wonderful than the machine that makes the pins. All that is needed is, to throw the pins into a hopper, supply the paper, and the machine does the rest.... I don't think that my friend in France had any idea, when he stuck his pins into the parcels, that it would lead to so long a talk to children all over the world. But we can not foresee what may come from our slightest acts.—THE DOCTOR.

Aunt Sue's Puzzle-Box.

We will give a few words of explanation, this month, concerning *Positives and Comparatives.* Most comparatives are formed by adding *er*, as high, higher; sweet, sweeter; black, blacker; short, shorter, etc. So that, when we make puzzles on "positives and comparatives," we select words terminating in e, r, or having the sound of er, but which need not really belong to any adjectives at all; as, for example, "scour"—take off the *er* sound and what do you leave? "Scow." Is that anything? Yes, a boat; so that that will make a first-rate "positive and comparative puzzle."—Positive, a boat (scow); comparative, to clean (scour). — "Stammer." Take off the er and what is left?—"Stam." Is that any word?—No. That will not do, then. Now if you look at the answers published in the April number, you will find weight, waiter; cent, center; pond, ponder; gnu, newer, and sleigh, slayer; all very good words for the purpose. With this explanation, I hope you will have no difficulty in guessing the following

POSITIVES AND COMPARATIVES.

1. Positive—correct; comparative—a scribe.
2. A support—fitting.
3. Part of a ship—a ruler.
4. A boy's name—a Southern State.
5. A girl's nickname—to purvey.
6. A rascal—to send.

(The positive and comparative in each line, understood.)

ANSWERS TO PUZZLES IN THE APRIL NUMBER.

SPECIMEN ENIGMA.—Look before you leap.

ILLUSTRATED REBUS.—(By an unfortunate position selected for this picture, some puzzlers mistook it for the "prize enigma," which enigma was on the next page). A rose would smell as sweet by any other name.

PRIZE ENIGMA.—(To be answered in July.)

SIMPLE ENIGMA.—Live within your income.

The "liquor agent's account" has been variously answered; by the majority incorrectly. J. H. B. sends the most terse answer, thus:

"1st.—The agent owes the town
2d.—In money $50.23—in liquor $31.37.
3d.—The town loses $8.11.

M. J. REID tells us more about it, and as so many have taken an interest in the sum, we cannot do better than quote from his letter: BROOKVILLE, ONTARIO, April 2d, 1877.

Dear Aunt Sue: * * * * I have given it (the account) to several of my friends, and they nearly all do it in different ways, and get different answers, the trouble being, in my mind, that they mix up the cash and the liquor; but I contend that, as the agent was simply an agent, his account with the town has nothing to do with the stock on hand when he took office, or the stock on hand when he left, as he did not contract to make money or lose it for the town, but simply to do the business, win or lose; whether the town made money or not is quite another question. The agent's statement, then, would be as follows:

AGENT IN ACCOUNT WITH TOWN.

Dr.—To cash received on taking office		$32.17	
" " from sales		102.97	
		135.14	
Cr.—By paid for liquor	59.91		
" salary	25.00		
" balance due town	50.23	135.14	
And the town would find that upon taking stock they had lost $8.11 as below.			
On hand upon commencing business.—Cash		32.17	
Liquor		57.54	89.71
On hand when agent went out of office.—Cash		50.23	
Liquor		31.37	81.60
Loss to town			$8.11

Hoping that I have not taken up too much of your time in giving such a long answer to a simple question in bookkeeping, in haste. I am etc., etc.

If you want a more exhaustive (not to say exhausting) statement, you can study the following:

STOCK ACCOUNT.

Dr.		*Cr.*	
To loss	$ 8.11	By cash	$32.17
Balance	81.60	" mdse	57.54
	$89.71		$89.71

CASH ACCOUNT.

Dr.		*Cr.*	
To cash on hand	$ 32.17	By mdse	$ 59.91
" received	102.97	Expenses	25.00
		Balance	50.23
	$135.14		$135.14

MERCHANDISE ACCOUNT.

Dr.		*Cr.*	
To liquor on hand	$ 57.54	By cash	$102.97
" cash	59.91	" liquor remaining on hand	31.37
Balance	16.89		
	$134.34		$134.34

EXPENSE ACCOUNT.

Dr.		*Cr.*	
To salary	$25.00	By loss	$25.00
Cash			

PROFIT AND LOSS ACCOUNT.

Dr.		*Cr.*	
To expenses	$25.00	By mdse	$16.89
		Balance	8.11
	$25.00		$25.00

By a "glance" over these five accounts, the transaction may be kept as "plain as a pike-staff."

Yours, etc., 150 Macon st., Brooklyn.

Besides the before mentioned names, the account has been correctly rendered by T. M. H., G. W. Y., G. P. B., Fred. M. N., J. W. C., G. H. N., Lucius E. B., G. E. Bunwell, Mrs. Theodore D. G., J. A. L., J. H. C., J. M. B., F. W. P., G. H. Warner. A. F. S., Macon Street, Warren L. F., Ed. H. S., Frank P. D., Mount Vernon, and Mrs. J. G. T. April 18th, 1877.

* * *

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Doctor's Correspondence.

That is right!—When boys or girls do not understand, let them ask. When one knows all about a thing himself, he may in telling others about it, forget some little point, or fail to describe it so as to be clearly understood. Here is Master Charles M. E., of New York City, who would like to try the

PIANO KALEIDOSCOPE,

which I described last month, only he does not quite understand how it is done. Well, Charlie, let me try again, and this time see if an engraving will not help. Let figure 1 represent your piano, as you stand looking towards the end. When you open the piano, the part that lifts is in two pieces, one of which goes straight down in front, and is hinged to the piece which is directly over the keys, and that again, is hinged to the larger part of the cover, which usually remains shut, and in its place. Ordinarily, in opening the piano to play, these two hinged pieces fold together, and lie flat upon the other part of the cover. To make the Kaleidoscope, you do not let the covers lie down flat, but prop them up with books or something else, as shown in the engraving at *B*. The piano cover being highly polished, the underside of the movable part *A*, and the surface of the fixed part, *C*, act exactly like the two mirrors of blackened glass in the kaleidoscope. But as you have no tube to put your big mirrors into, you must hang a cover, such as a shawl, all along the open space, represented by the book, from one end of the piano to the other. Having done this, I think you will understand, from the description given last month, how to operate it... All the letters do not come from youngsters, for I sometimes find in those from older persons things that will interest you. For instance, a gentleman in Maryland sends specimens of

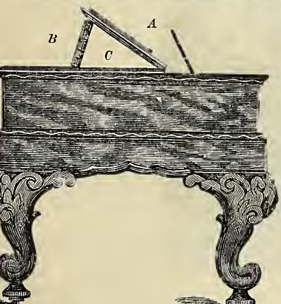


Fig. 1.—PIANO KALEIDOSCOPE.

AN INSECT THAT BUILDS A STONE HOUSE.

A box came with some specimens, and a letter asking what they were. I wrote and told him about them, but I give you, what I could not send him, an engraving of one of them. The box was full of little tubes of the size and shape of that in figure 2. Each tube was made up of little bits of stone, small pebbles, which were put together, and as nicely fitted as the stones in a well built wall; they were fastened together by a cement that water would not dissolve. Each of these tubes was built by an insect, to serve as its house; or, as it is carried about by the creature, it is more like a great coat. As soon as they came, I put the tubes into water, but the insects were all dead, so I have to borrow the picture of the builder of this pretty mason work, fig. 3, from Mr. Packard's book. I have told you so many times, that I hope you remember it, that the different states of an insect are 1st, the egg—2nd, the *larva*, which comes from the egg; we know some kinds of larva as caterpillars, and others as grubs and maggots; it is in the larva state that the insect feeds most, and makes its growth; after a while it goes to rest, and becomes 3rd, the *pupa*, or chrysalis, one kind of which is a cocoon, and sooner or later there comes from this, 4th, the perfect insect, usually the winged form, such as we see in the butterfly, the beetles, and all other winged insects, including the house-fly and mosquito. Now I hope you will recollect this about insects, as I shall not repeat this again—at least not this year. Well, the fellow who builds this mason work, is

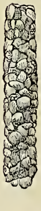


Fig. 2.

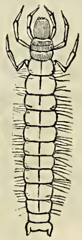


Fig. 3.

THE LARVA OF A CADDIS-FLY,

and is shown in figure 3. You must know that the larva of many winged insects pass their lives in the water; the well known mosquito does this, and the "wrigglers" you see in water that stands a while, such as that in a rain-water cask, are the larval form of our musical friend the mosquito. The larva of the Caddis-fly passes its life in the water. It has a pretty hard head and front, but the rest of its body is very soft, and as it can not move very quickly, it would fare poorly, did it not build a case to protect its long and soft body. There are several Caddis-flies, and their larvæ (plural of larva), do not all build stone houses. Some prefer straws, small chips, and twigs, for a covering. Some use dead leaves, others build their cases of little bits of moss, and one would never suspect that there was an insect inside of the little tuft, did he not see it travel off; then there is one fellow that hunts around for the empty shells of little fresh water animals, and builds its case of them. All of these are more frequent than the stone-building one, which is put down in the books as belonging in Labrador and elsewhere far north, and I was surprised at seeing it from so far south as Maryland. The insect, when first hatched, is very small, but young as it is, it starts its case, and as it is not built, as boys' clothes are cut, "to allow for growing," it has, as it increases, to keep on adding to the case. After it has reached its full size, it finds a safe place, closes up each end of its case by spinning some bars, and remains a while as a pupa; at last it comes out as the winged insect, or Caddis-fly. As the perfect insect of this stone-mason Caddis is not known, I cannot give you its portrait; but the Caddis-flies generally, are much like the Dragon-flies, or Darning-needles, though their bodies are not so long. You may not find these stone-builders, but in most slow streams, if you watch carefully, you can find those that build cases of other materials. But before leaving the Caddis-fly I must tell you how a lady in England

MADE AN INSECT DO ORNAMENTAL WORK.

She caught a lot of Caddis-worms, and gently pushed them out of their cases into a dish of water. Of course the insect set about hunting for material to make a new case. The lady supplied it with—what do you suppose? —small glass beads of different colors! Being the only things they could find, the poor Caddies went to work, and in time had very gay cases of variously colored beads, all nicely cemented together. Very pretty they must have been, and I was very sory not to find a single one, of several dozen sent me, that was alive, as I much wished to try the experiment with the beads. It is not at all likely that the Caddis-worm would use beads, no matter how plenty they where, if offered to it in the brook, for it would know that they would make it all the more showy and readily seen by fishes and other animals. All their covering are intended to

HIDE THEM FROM THEIR ENEMIES.

It is curious to notice the various ways in which insects, especially those that move slowly, are disguised, either by their color or form, so as to be less noticed by birds. On another page is given an account of an insect, very destructive to trees in one place, which is called a Walking-Stick, or Stick-bug, as it looks so much like a twig that it would not be noticed, unless seen in motion. It is a very slow traveler, although so well supplied with legs, and no doubt this resemblance to a stick cheats the birds. In the East Indies there are several insects called "Walking-Leaves," one of which is shown in figure 4. They look much like a leaf in form and color, and are evidently thus disguised that they may the better hide from their enemies among the leaves....Jenny L. has had a present of a Cologne bottle with

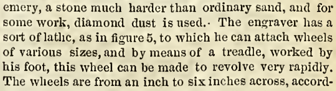


Fig. 4.—WALKING LEAF.

HER NAME ENGRAVED UPON THE GLASS,

and of course wonders how it is done. Engraving is now a very popular style of ornamenting glass, and it is a beautiful one. It is not uncommon, for those who can afford it, to have their goblets and other glassware ornamented with such designs as they may select, and marked with their own initials, and most of the large stores that deal in such articles keep engravers to do this work. The usual bright surface of glass, when rubbed with something harder than itself, will become dull. It may be scratched and made dull by the use of a file or by rubbing it with sand; in engraving, the material used is emery, a stone much harder than ordinary sand, and for some work, diamond dust is used. The engraver has a sort of lathe, as in figure 5, to which he can attach wheels of various sizes, and by means of a treadle, worked by his foot, this wheel can be made to revolve very rapidly. The wheels are from an inch to six inches across, according to the work, and are made, usually, of copper of different thicknesses. The edge of the wheel, like that in the engraving, is smeared with oil and fine emery, the oil being used to make the emery stick to the wheel, and the wheel is set to going very rapidly. If a goblet, or any other thing of glass, is brought against the wheel, its surface will be scratched at once, and you can see, that by turning the goblet a line can be scratched or engraved quite around it. Straight lines are but little used; the engraving is usually in most graceful lines, and vines and other figures are represented. To understand how these are made, fasten a lead pencil so that it can not move, and then try to draw or write something by moving a card against the pencil. You would find it very difficult at first, but could soon get the knack of moving the card, so as to write your name. The wheel is like the fixed pencil, and the glass, like the card, must be moved in order to form the engraving. You can see that it requires much practice and skill to engrave on glass nicely, for, of course, a mistake or wrong line cannot be rubbed out.

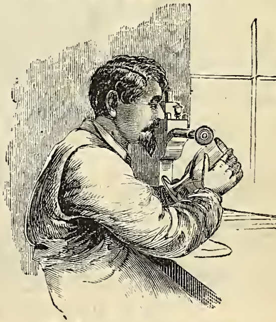


Fig. 5.—ENGRAVING ON GLASS.

Aunt Sue's Chats.

AMELIA.—Your friend need not necessarily have meant "a guard ring"; there are "regard" rings, so-called, because the initials, or first letters, of the different stones as purposely arranged, spell "regard"—thus, Ruby, Emerald, Garnet, Amethyst, Ruby, and Diamond.

WATERTOWN.—They have "the right" to have the child christened "Nettie," if they choose to exercise it. It is a matter of taste; should prefer to have her named Antoinette, and use "Nettie," as a pet name. Nanette "means" Little Ann; Beatrice, blessed; Theodosia, God's gift; Kathleen, little darling; Helen, light; Ida, happy. Many other names have a pleasant meaning.

J. W. W.—I can only give you such information concerning "the number of visitors to the Centennial," as I glean from the papers, not being "posted" officially. The number of cash admissions from May 10th to Nov. 10th, was 8,004,274; free admissions, 1,906.692; Total, 9,910,966. Total cash receipts, $3,813,724; though why it should not have been $4,002,137, if the admission was 50 cents, my arithmetic does not enable me to determine.—[Aunt Sue forgets that there were several 25c. days.—ED.]

MABEL S. W. wants to know what "cutting up didoes" is derived from. It has quite a classic derivation from Queen Dido herself. When she was about to found the city of Carthage, she bargained for as much land as could be contained within an ox-hide. The contract being concluded, the cunning Queen cut the hide into a string long enough to encircle all the ground she wished to procure for the site of the new city. Hence arose the phrase of "cutting a Dido," and its application to sharp practice and eccentric, unexpected proceedings.

MRS. M. A. B.—Bryant is "the oldest," being 80; Longfellow 70; Whittier 69; Holmes 68; and Lowell 58.

IN AMBIGUO.—I have always heard (J. G. Holland's poem of) Kathrina pronounced "Kat—reen--a" (or "Kat—recner" without rolling the final r); the h being silent, as in "Thisbe" (*Tisby*).

MISS X. Y. Z.—Had you read my "Chats" in the April number when you wrote your letter?

Thanks for letters, puzzles, etc., (received up to the 18th of April) to L. N. J., Emma R., William M., Kate M., Blackwell S., Florence M., William M., Jr., F. P. S., J. H. P., E. A. Y., C. A. T., Geo. E. L., Willie (Bailey), Maggie S., E. B. P., F. A. P., R. M. McD., Whe (J) atley (W-), J. R. J., M. A. R., Gertie D. W., Joe L., W. Carlo, Lollie, G. A. C., Jesse M., J. W. B., and M. A. C.—If I have failed to notice any letter written to me before the date mentioned above, it is probably because it was sent to 245 Broadway, N. Y., (where I *don't* live) instead of to Brooklyn (where I *do* reside).

THE PET BIRD.—*Drawn and Engraved for the American Agriculturist.*

The Pet Bird.

You will at once say that this is not a home picture—and you will be right. Why is it not a scene at home?—You have no doubt noticed that the part of the house in the distance, the piggin or one-sided pail, and the big water-jar, are all such as belong to another country, while the dress of the young Miss is quite unlike our present fashions. Having a bird for a pet, is much more common in Europe than with us, as they have many more song birds than we do, and the people take much more pains in raising and taming them. Indeed, there are parts of Europe where the people get a large part of their living by raising and training birds; they are not pets to them, as they do not care for them, because they are fond of them, but for the money they will bring; they only raise the birds to be pets for others. You perhaps will wonder that the bird in the picture does not fly away. It is no doubt a Bull-finch, which becomes very tame, and so fond of the person who cares for and feeds it, that, though allowed its liberty, it will not go off to join its wild companions. It does not seem wrong to keep a bird of this kind which stays a captive when it could go off if it wished. In some parts of Europe these birds are taught to whistle tunes; if taken early, it is not difficult to teach them one tune, which they will whistle very correctly, but it is difficult to teach them two airs, and have them keep them apart. A bird that will perform more than one air well, brings a very high price. The Bull-finches are also taught to raise a little bucket of water when they wish to drink, and to pull up a car of seeds when hungry. The Canaries, though they cannot be taught like the Bull-finch, often show much attachment to their owner, and are very pretty pets, though some are much more intelligent than others. We were in a depot not long ago, where the man who kept the refreshment place had three Canaries; these were allowed to fly about at will for a part of the time each day; they would go where there was all the noise and din of rushing steam, the screams of whistles, and among the crowds of passengers, without getting at all confused; they would come back whenever the owner whistled for them, as obediently as a well trained dog. Our pet birds, if we except the Mocking-bird, which is never much of a pet, generally come from other countries. Our birds in their wild state seem to have very knowing ways, and no doubt could be tamed and taught as well as others, but very few seem to have given attention to them. After all, we think it as well that our own birds should be left to the enjoyment of their liberty. We can, if we take pains, make them very good friends without confining them in a cage, as the correspondent shows who wrote so pleasantly last month about "My Pet Birds." If we keep the cats away from them, and do not allow any one to frighten them, there are many birds that will come to us of their own accord. If we would keep pet birds in the house, it seems more kind that they should be those that have been bred for many years in cages, and which, never having known liberty, are perfectly contented to live away from the woods and fields, which our own birds, when caged, seem to pine for. No one should keep pet birds, or indeed pets of any other kind, who is forgetful and cannot attend to them regularly. A day of neglect may bring much suffering to the poor little captive, who depends upon you for food and water. Recollect, that the keeping of a living pet of any kind, brings with it an obligation or promise to care for it regularly, as you place it where it can not help itself.

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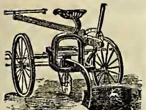
THE GILPIN SULKY PLOW.



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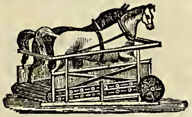

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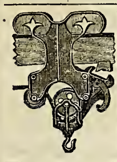

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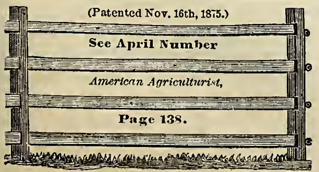
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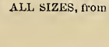

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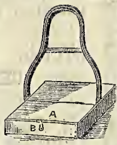

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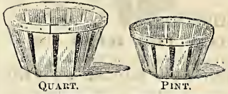
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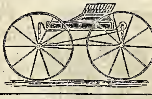

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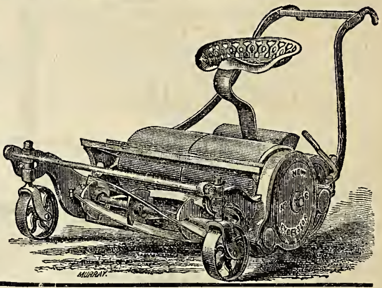

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SUPPLIED WITH THE

Celebrated Excelsior Lawn Mower.

H. B. GRIFFING,

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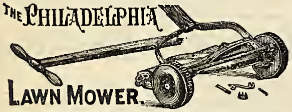
1877.

THE PHILADELPHIA LAWN MOWER.



EIGHT SIZES FOR HAND USE.

Weighing from 28 to 55 lbs.

THREE SIZES FOR HORSE POWER.

These machines did work on the Centennial Grounds equal to ten years' ordinary wear, without loss of time for sharpening or repairs—completely distancing their competitors in the trial of six months constant use.

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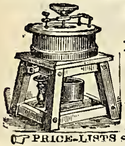

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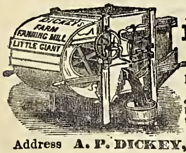

BUY THE A. P. DICKEY Fanning Mill.

No good Farmer can afford to market dirty grain.

A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

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we will with pleasure send you a sample copy of our **Monthly GLEANINGS IN BEE CULTURE,** with a descriptive price list of our latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all Books and Journals, everything pertaining to Bee Culture. *Nothing patented.* Simply send your address on a postal card, *written plainly,* to

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The Farquhar Separator

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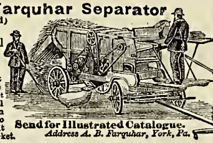
Penna. Agricultural Works. York, Pa.

Lightest draft most durable simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.



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Steam Engines, Horse Power and Thrashers of all kinds. Also, Ploughs, Cultivators, &c., &c.

Horse Powers and Threshing Machines of all kinds a specialty. Send for large Illustrated Catalogue.

SPRING STEEL TOOTH

HORSE RAKES.

Highest Award. Medal of Honor at the Centennial and Vienna Exhibitions.

THE CHAMPIONS OF THE WORLD.

No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted, where we have none.

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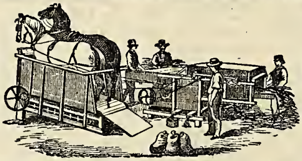

The Peerless Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—Grain Fans and Corn Shellers. Our machines have received the highest testimonials and cannot be excelled.

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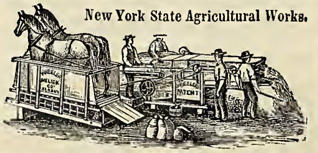

First Premiums at all Competitive Trials.

Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,

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Send stamp for Circular and report of Centennial trial.

"Our Preference is the Buckeye."

—*American Agriculturist,* June, 1872.

The Simplest,
The Strongest,
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AWARDED The HIGHEST HONORS IN EUROPE AND AMERICA

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STYLES AND PRICES TO SUIT ALL CLASSES OF FARMERS

Best Mower,
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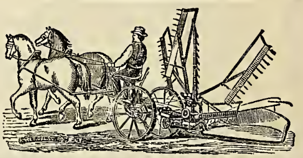

THE JOHNSTON HARVESTER CO.,

Manufacturers of

Self Raking Reapers, Combined Machines, and Mowers,

Send for Catalogue. **Brockport, N. Y.**

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HAY LOADER.

A perfect machine for rapidly pitching hay, barley, and all loose grain on the wagon, in the field. Increased success in the harvest of 1876. Received the highest and only award for Hay Loader, with Diploma of Merit at Centennial Exposition, based on field trial. Thousands in successful operation. *Send for circulars early to the manufacturers,* STRATTON & CULLUM, Meadville, Pa. ☞ KINGMAN & CO., Peoria, Ill., Gen'l Agents for Illinois, Missouri, and Kansas.

Happy Hours AT HOME.

FUN FOR

Little Folks

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Great Folks.

Nothing has ever been invented that more fully combined amusement and instruction, and proved more truly an almost endless means of making the little ones (and the great ones) happy, than

Crandall's Blocks

For Children.

Read about them below.

CRANDALL'S HEAVY ARTILLERY.

The greatest amusement of the age! Recreation at home for all ages and for all seasons! Crandall's Heavy Artillery is made up of a large Cannon, complete, which throws a 1½-inch Rubber Ball to the distance of 25 feet or more, and Sixty Blocks (Red, White and Blue), to build up Fortifications, also a Company of Soldiers, with Officer and Flag, to Garrison the Fort. The Game is to beat down the Fort by the use of the Big Gun. Rules, Illustrations of a variety of Forts, etc., accompany each box containing the set, and the box is 18 inches long, 6 inches high, and 8 inches wide.

Price per Set, $3.00. *Expressage to be paid by the recipient.*

CRANDALL'S WIDE-AWAKE ALPHABET.

No more long faces and no more tears over A B C! Here we have amusement and instruction combined. Each box contains twenty-seven little men, each representing a letter, with arms, legs, and jolly faces. This set of Blocks is susceptible of more changes, and a greater variety of forms and combinations than any Spelling Block ever offered to the public. The Pieces are durable, the Letters plain, the Faces mirthful, and the Amusement afforded by them unlimited. They please while they instruct, and are a source of enjoyment to young and old.

Price per Box $1.00; *by mail, prepaid,* **$1.50.**

CRANDALL'S JOHN GILPIN.

This beautiful and interesting toy is regarded by Mr. Crandall as one of the best of his inventions for the little folks. It is made up of two figures, John Gilpin—whose highly colored dress is specially attractive to Boys and Girls—and his Horse, which intelligent animal performs a very important part in the illustration of Gilpin's famous ride.

Price per Box $1.00; *by mail, prepaid,* **$1.35.**

CRANDALL'S TOY HORSE.

Here is something that will make glad every little boy that gets it. The Toy Horse is about 6 inches in hight to the tops of his ears. He stands upon a four-wheeled base, all ready to be set in motion by his owner. He is made up in pieces and can be taken apart and laid snugly away in his box.

Price 25 Cts.; *by mail, prepaid,* **35 Cts.**

CRANDALL'S LITTLE ALL-RIGHT.

One of the funniest and most amusing of the low-priced toys. The lively little All-Right throws himself into a great variety of positions as he whirls around the "wheel." Can not be sent by mail. For sale by Toy Dealers generally.

"YE HERO OF '76."

The great "Centennial Toy." A fine old soldier in a brilliantly colored uniform, with cocked hat, staff, and flag, all put up in a neat box. The Hero is so constructed that he can be placed in almost numberless and amusing positions, and will delight the children everywhere.

Price 35 Cts.; *by mail, prepaid,* **45 Cts.**

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Full of fun and frolic, and most brilliant in costume. These are among the most fascinating and ingenious toys ever invented. The number of figures which can be made with the pieces in a single box is limited only by the ingenuity of the operator.

Price $1.00; *by mail, prepaid,* **$1.25.**

CRANDALL'S MENAGERIE.

One of the most wonderful and amusing things ever brought out for the entertainment of children. The six animals composing the menagerie are beautifully painted, and so arranged into 56 pieces in each box, that tens of thousands of most laughter-provoking figures can be made up with them.

Price $2.00. [*Purchaser will pay express charges. Box too large to go safely by mail.*]

CRANDALL'S BUILDING-BLOCKS.

Can be made into forms of almost endless variety.

The blocks are put up in neat, strong boxes, and a large sheet giving various designs of buildings, etc., accompanies each box.

Price—No. 1, $2.00; *by mail, prepaid,* **$2.50.**
No. 3, $1.00; *by mail, prepaid,* **$1.25.**
No. 4, $1.00; *by mail, prepaid,* **$1.15.**

CRANDALL'S ILLUMINATED PICTORIAL ALPHABET CUBES.

These Cubes are gorgeously colored, and will make over 500 beautiful combinations or figures. They are water-proof, odorless, and durable; put up in handsome black walnut boxes; and are most attractive to both young and old—an elegant present for the little ones.

Price $2.50; *by mail, prepaid,* **$3.00.**

CRANDALL'S MASQUERADE-BLOCKS.

Making 300 different and beautiful Combinations of Pictures, which are in very brilliant colors. They are not injured by washing, do not wear out, and afford endless amusement.

Price $1.00; *by mail, prepaid,* **$1.20.**

CRANDALL'S EXPRESSION-BLOCKS.

With Letters on one side, Picture on the other. The Alphabet is the key to the picture which, when complete, represents the inventor in Dream Land. These Blocks are water-proof, and can be washed if soiled.

Price 50 Cts.; *by mail, prepaid,* **70 Cts.**

CRANDALL'S ALPHABET-BLOCKS,

Red, White, and Blue.

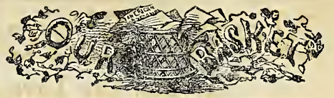
Tasteless, odorless, and water-proof. The letters are on red, white, and blue ground. All children are pleased with them.

Price 75 Cts.; *by mail, prepaid,* **$1.00.**

N.B.—*If postage is not remitted with the prices, as above, the blocks will be sent by express at purchaser's expense.*

Orders from the trade will be supplied on liberal terms.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 209.

Treatment for Lampass.—"R. O. M.," Pope Co., Ark. For a horse that is troubled with lampass, take a sharp knife and cut the swollen parts in short slight gashes, one inch apart, and about one inch long. Then make a strong decoction of white oak bark, and swab the mouth well two or three times a day. It is a sign of indigestion, and it would be well to give a pint of linseed oil daily for two or three days.

The Angora (Mohair) Goat.—"M.," Russelville, Ark. The Angora goat will do very well in Arkansas. It succeeds well in Georgia. You can procure them of Mr. Richard Peters, Atlanta, Georgia, who will give you any needed information about them.

Use of Bones for a Fertilizer.—"C. D. E.," Healthsville, Va. It is not advisable to reduce bones with oil of vitriol, unless one has experience and every facility for doing this dangerous work. Bones may be ground in any steel mill. The Bogardus Eccentric Mill is extensively used for this purpose. The bones should be ground finely to be of greatest service.

Swelled Leg in a Horse.—"M. M. G.," Blair Co., Pa. When a cut or a bruise in a horse's leg is healed too quickly, and before the inflammation has disappeared from the wounded parts, the limb will often swell and become hard. This may be caused by absorption of the suppurated matter which ought to have been discharged from the wound. The remedy is to give purgatives, the best, probably, being one ounce doses of hyposulphite of soda, with alternate doses of half an ounce of nitrate of potash. Cold astringent lotions and bandages on the limb may be useful, or blistering may be needed. If the horse is valuable, it would have been wise in the first place to have employed a veterinary surgeon. Hot tar should not have been used on it.

Warbles.—"A Farmer." The lumps found on the backs of cattle at this season, each contain a grub, or larva, of the ox gad fly, (*Œstrus bovis*). The lumps should be squeezed to force out the grub, which is to be destroyed. If a drop of sweet oil is placed in the opening, the grub may be removed much easier. To prevent them, mix a pound of lard with a teacupful of kerosene oil, or one dram of carbolic acid, and rub the mixture on the backs of the cattle, in July and August, when the flies are laying their eggs.

Gas Tar as a Preservative of Wood.—"S. S. B.," Blair Co., Pa. It is stated by persons who use gas tar extensively that, when fresh, it contains an acid which is destructive to wood. When this acid is neutralized by the mixture of half a bushel of freshly dry-slacked lime with a barrel of the tar, the neutral tar is then considered as an excellent preservative of wood that is coated with it.

Manufacture of Potato Starch.—"J. F. C.," La Crosse, Wis. An illustrated article, describing the manufacture of potato starch, was given in the *American Agriculturist* for September, 1876. There is no work specially devoted to this manufacture, and no work that we know of gives so full an account of this business as the article referred to.

Wire-Worms.—"G. S. W.," Selina, Ohio. Those you send are undoubtedly the larva of some Click Beetle. You ask why you find in a field "a bushel of wire-worms, (children), and not one Click-Beetle, (parent)." The habits of these insects have not been sufficiently studied. Writers on insects say they pass, "several years" in the larva or wire-worm state, but how many does not seem to be known. If they are three or five years in this form, you will not see the perfect insect every year. All the Click-Beetles are not the large gray ones, with black "eyes" or spots, but some are small, and not at all conspicuous, slender, and dark-brown, and would not be suspected of "click" until tried. The wire-worms are very fond of potatoes, and in England, (where they have similar insects), these are used to trap them. A potato through which is stuck a long stick, is buried where the worms abound; the stick shows where the potato is buried, and allows it to be taken up at intervals, when the wire-worms that have collected can be destroyed.

Honey Locust and Catalpa Seeds.—"W. F. W.," Iowa. These seeds need no preparation before sowing. Those of Honey Locust, if of the previous year's growth, have with us germinated almost as readily as beans. If old, we should scald them. Catalpa seeds are very thin and light, and should be covered but slightly; do not sow until the ground is warmed, in a light rich soil. We fear that the Catalpa may not be hardy with you, but do not know positively.

Seed Distribution.—In the course of a year we get some strange letters, but quite the strangest of late, is one from a lady in Indiana, who "has been informed" that we were "the Government Commissioners for the distribution of foreign seeds," and gives us a list of those she wishes, without even a stamp to pay postage. No, we thank you, madam, we have "no connection with the shop over the way." Mr. F. Watts, Washington, D. C., is seed peddler in general. We do not know what the future may have in store for us, but we haven't yet come to running a government seed shop.

Export of Horses.—The export of live animals from the United States and Canada, is rapidly increasing, and bids fair to become an extensive and profitable business. Already hundreds of horses are annually shipped from America to Great Britain, and to encourage the business, an association called the "British Empire Horse Supply Association," has been formed with a Million dollars capital. The purpose of the Association is to import and export both horses and cattle, and the chief source whence the supply is expected is North America.

Exports of Agricultural Produce.—The total exports of agricultural produce for the year 1876, amounted to $490,969,740. Of this large sum grain and flour amounted to $132,085,740; meats to $62,156,223. Cotton amounted to $187,662,425, or less than the value of breadstuffs and meat alone. The value of mined and manufactured articles exported in the year, was $146,482,428, or less than one-third that of agricultural produce. This is an encouraging exhibit, and it is more encouraging still to know that there is a probability of a large increase in this export business.

Weight of Dressed Mutton.—"L. L. B.," Springfield, Ill. A well fatted sheep will give 57 to 58 lbs. for the 100 lbs., if the fleece is not more than three months old; a sheep in good store order will dress 50 lbs. to the 100; these estimates do not include the head, heart, or any part of the valuable intestines.

A Puzzled Jury.—"G. D. A.," Poughkeepsie, N. Y., sends an account of a case which came before a jury, but which was too much for them. A cow had a dead calf on the 1st of Nov., and the owner put with her a 2-days-old calf of another cow. A short time after the cow was sold as a new milch cow, with a calf, but nothing was said about the calf being a foster one. A month afterwards, a badly decomposed fœtus was taken from the cow by the purchaser, who suspected fraud, and sued the seller for the return of his money. The question which the jury could not decide was, whether a cow could carry one of a pair of twin calves in a dead state for four weeks after the birth of the first. Such a thing has occurred frequently, and is not at all strange. What the equities of the case are, however, we do not feel called upon to decide. If we had sold the cow, we should feel bound in honor to return the money, unless at the sale the usual conditions were announced that the animals were sold 'with all faults and errors of description.'

Spring and Winter Barley.—"C. J.," Rockbridge Co., Va. The seed of barley sown in the fall will grow equally as well if sown in the spring. It will be somewhat later in ripening than the fall sown.

Profit of Breeding Horses.—"Young Farmer," Lancaster Co., Pa. There is probably no more profitable branch of agriculture than horse-breeding, if the proper kinds are kept. If not, there is scarcely a more unprofitable business. A few poor horses will soon "eat their heads off." The demand is now for horses that are strong, large, and active, fit for carriage horses, or for active service in cities. These come from roomy rangy mares, and a well-knit stout stallion, of good trotting family. The mares will earn their feed by farm work, and the profit will be in a colt every year. Breeding of stock takes less from the soil than grain growing.

What Constitutes a Thorough-bred?—Prof. G. E. Morrow writes, in reference to a reply to this question in the *American Agriculturist* for May, that we "are in error in the statement that five crosses entitle an animal to entry into the Short-horn Herd-Book. For the English Herd-Book four crosses entitles a cow to entry, making five, of course, for a bull. In America, the rule is supposed to be more strict. For entry in the American Short-horn Herd-Book, animals must trace to imported stock or to those already recorded; for the Short-horn Record, Alexander's, they must trace to imported stock on both sides in all cases." Here is a distinction without a difference, and fails to show our statement to be an error. If in the English Herd-Book four or five crosses entitles an animal to entry, and entry in that herd-book entitles, on importation, to entry in the American Short-horn Herd-Book, then it is as we said. The question is, what makes a thorough-bred, and as five crosses make a thorough-bred in England, and such an animal imported is accepted here as thorough-bred, what is the difference between a thorough-bred and an animal having five crosses.

An unusual Occurrence with Pigs.—"N. J. H.," Hillsdale, Ill., writes that five of his sows have already had pigs, but that nearly all of the pigs have been wrongly presented (breech presentation), and consequently only seven of them have been saved. There is nothing extraordinary in a wrong presentation, but that it should be generally the case with a number of sows on the same farm, would lead to a supposition that some accident must have occurred. Very violent action, such as chasing by a dog, might cause such an accident in some; but we can offer no explanation of the fact that nearly all were affected.

Poultry Manure for Tobacco.—"W. M.," Lock Haven, Pa. Poultry manure or other concentrated fertilizers should be used, so as not to come into close contact with the roots of a plant or the seeds, except in a diluted condition. It should either be mixed with earth before applying it, or it should be scattered over the ground very thinly.

Corn after Buckwheat.—"P. R.," Oshkosh, Wis. There is no good reason why corn should not produce a good crop after buckwheat, if the soil is good. Buckwheat has no injurious effect upon the soil.

Difficulty in Making a Cistern.—"T.," Troy, N. Y.—It frequently happens that in digging for a cistern, surface or spring water enters from the side or bottom, and hinders or prevents success. We have recently experienced such an obstacle, and surmounted it as follows: A floor of hard brick was laid in cement, after spreading a layer of concrete of cement and gravel three inches thick. The water was kept dipped out. This was left to harden for two days, then the wall of brick laid in cement was raised, and a backing of concrete put in, and rammed, but not so hard as to displace the bricks, between the wall and the earth. This was carried up to the surface, and a perfecty water-tight cistern, both inside and out, was the result.

Shepherd's Dog.—We have an unusual number of inquiries for trained shepherd's dogs, but unfortunately have no knowledge of any competent person who makes a business of training them. Any one who would undertake the rearing and training of good dogs, would find ample demand for his animals from the readers of the *American Agriculturist* alone, provided he made the fact known in the usual manner.

How to feed Fodder preserved by Ensilage.—"T. M. H.," Wheeling, W. Va. In the *American Agriculturist* for June, 1875, was given an illustrated article on the preservation of sour fodder in silos. The word "silo" is defined in Webster's Dictionary, as a subterraneous pit for keeping feed. It is precisely the same in the French. The fodder is cut from the silo with a long knife, or a spade, ground sharp, in upright slices, leaving a compact smooth face. A smooth, closely fitted shutter, or several of them, are placed closely against this face and pressed tightly to it by braces against the sides or the floor. In this manner access of air to the open side is prevented.

Grass for Reclaimed Marsh Land.—"T. J. C.," Wood Co., Wis. If the soil of the marsh is yet very moist, Red-top would be the best grass to sow. If it is only moderately moist. Timothy will succeed very well. No clover but Alsike would do well on it.

How to Treat an Injured Foot.—"W. L.," Tallapoosa, Ala. A mule's foot, that has been crushed, may be cured by proper treatment. The mule is by no means beyond future usefulness. Dress the foot with cold water, and keep it bandaged; cut away the torn pieces of horn, and as soon as the inflammation has subsided, dress the wounds with tow or lint, steeped in cotton-seed-oil, to which a little carbolic acid has been added, applying every morning to the wounds, before the tow is used, some compound tincture of myrrh. In course of time the horn which has been removed will be replaced. Of course the animal must be kept at rest.

Composition for Welding Iron.—"W. S. B.," Barnwell Co., S. C. A composition for welding iron at a very low heat is made by Delamater & Co., 13th st., N. Y.

Book on Sheep Raising.—"S.," Terre Haute, Ind. Stewart's "Shepherd's Manual" is the most useful book on sheep breeding and keeping. It contains all the information needed that can be learned from books, and very full and plain directions for all the different operations connected with keeping sheep, with many illustrations. It can be procured of the Orange Judd Co. for $1.50, post-paid.

Wool Manufacturer's Bulletin.—"A. R. S.," Terre Haute, Ind. The Bulletin of the Wool Manufacturers' Association is published quarterly in Boston. This address is sufficient to reach it. It contains much information, of value to those who grow wool, as well as to those who manufacture it.

Salve for Cracked Teats or Wounds.—"T. A. G." An excellent salve for dressing cracks, cuts, or wounds, in cattle, sheep, or horses, is made as follows: Melt together, with a gentle heat, 2 oz. each of bees-wax and rosin, add half a pound of lard, and when melted and removed from the fire, four ounces of turpentine; when this is well mixed and while liquid, stir in thoroughly one ounce of finely powdered verdigris, and continue stirring until cold, and keep in a jar. This should be applied after washing the parts with warm soap and water.

Rye amongst Corn.—"W. H. S.," Peoria, Ill.—If rye is sown amongst corn at the last plowing in July, it will probably head out before winter, and be lost. This is too soon. If the corn is cut as soon as ripe, and shocked in rows 30 feet apart, the field may be plowed early in September, and sown to rye in the usual manner with success. When the corn is moved, the vacant rows may be plowed and sowed also, and although later, these will produce a crop of straw, if not of grain.

Peas and Oats for Fodder.—"C. W. F.," Princess Anne Co., Md. The common northern field pea is the one used with oats for fodder crops. Any kind of pea will do. Tares or vetches are equally useful. The object is to get a heavy burden of foliage and stem along with the oats. Very nearly the quantity of seed used of each when grown separately, may be sown.

Lime for Composting Swamp Muck.—"A. W.," Cecil Co., Md. Lime newly slacked, dry, and in fine powder, is the best material for composting with muck, to prepare it for use. Gypsum is a neutral salt, and cannot combine with the acids of the muck, or aid in decomposing the vegetable matter. The mild lime usually imported into Maryland from the Pennsylvania lime kilns, or oyster shell lime, may be used.

Diseases of Cattle.—"H. F. H.," Hopedale, Ohio. Dr. Dadd's book on Diseases of Cattle, (price $1.50), is one of the best works on this subject. Prof. Law's "Farmer's Veterinary Adviser," is a new and very valuable work. The price of this book is $3.00.

Brewer's Grains not Good for Horses.—"A. S.," Manchester, N. H. Brewer's grains are not to be recommended for horses. Sloppy sour food is to be avoided, as well as dusty feed, such as malt-sprouts. But cows do well on such feed, and for them both the grains and sprouts are useful. A horse requires concentrated and dry food, as its stomach is very small as compared with that of a cow.

Sawdust in Manure.—"Reader," Orange Co., N. Y. Manure made of sawdust for bedding, is not worth so much as that made with straw. It is apt to "burn" or fire-fang in heating, and contains very little of the most valuable component parts of straw. The manure is reduced in value from one-third to one-half.

Hungarian Grass.—"A. S. S.," Northumberland Co., Pa. This should not be sown until June. Half-a-bushel of seed per acre is ample. The crop should be harvested before the seed begins to ripen, and cured in the same manner as timothy hay.

Gypsum on Corn.—"Elmwood," Peoria Co., Ill. Gypsum, or plaster, should be applied to corn, when the plants are about six inches high. A handful may then be scattered about each hill. About 300 lbs. per acre will give one ounce for each hill.

How Peat Muck may be Used.—"S. J.," Bayou La Fourche, La. To use muck as a fertilizer, dig it and let it drain for a few weeks, then compost it with cotton-seed, adding a bushel or two of shell lime or burned marl to the wagon-load. Keep plenty of muck on the top of the heap.

Chicken Cholera.—"J. C. E.," Morgan Co., Ohio. The cause of chicken cholera is undoubtedly a disease of the liver, and not of the intestines, until these become affected in course of time. To prevent it, the fowls should be kept dry, and have pure water, pure air, and not an excess of wholesome food. Corn, fed continually, is not wholesome; either wheat, barley, oats, or peas, should be given at least once a day. Over-feeding, and forcing the fowls, tends to produce this disease as much as anything. When first taken, a pellet of "blue pill," the size of a duck shot, given twice in one day, followed by half a teaspoonful of castor-oil the next morning, has been found effective.

Paralysis in Pigs.—"J. B," Hosensack, Pa. High-bred pigs, especially Essex and Berkshires, are more subject to paralysis of the hind-quarters than pigs of the common kinds. The disease is due to a softening of the spinal cord, and effusion from the surface of the affected parts, which occasions pressure, and consequent inaction of the nerves which start from the spinal cord. These nerves are connected with the digestive organs and the muscles of the hind parts, consequently these organs and muscles become partially or wholly paralized. When the paralysis is complete, nutrition is suspended, and the animal dies. The remedy is, to apply mild blisters, mustard plaster or spirits of turpentine, to the loins, give one dram doses of nitrate of potash, dissolved in some bran slop, daily, and feed light nutritious food. Keep the animals warm and dry.

Legislating Backwards.—The North Carolina Legislature recently enacted a law, by which any manufacturer or dealer of commercial fertilizers is compelled to pay a license tax of $500, under the penalty of indictment if he should sell, or offer for sale, any fertilizer without having paid the tax. A farmer who may bring into the State any fertilizer in evasion or violation of this law, is held to be guilty of a misdemeanor.

Proper Food for Fowls.—"W. S.," Memphis, Tenn. Corn is by no means a sufficient food for poultry. It is rich in starch and oil, but deficient in nitrogen, sulphur, and lime, all of which are contained in considerable quantities in eggs and feathers. If corn is the most convenient food, it may be used by having some of it ground coarsely, soaked in warm water, and a small quantity of powdered burned oyster shells, or bones, mixed with equal quantities of sulphur, salt, and ground pepper, and some chopped lean meat added to it.

"Brazilian Artichoke."—A correspondent in Iowa asks where the "Brazilian" Artichoke can be had. It is bad enough for the plant to be called "Jerusalem" Artichoke, a name which is a corruption of *Girasole*, the Italian for sunflower, and it has no claims to the title Brazilian. In various works Brazil is said to be its native country, but as we have already stated, it is not known there, and Prof. Gray has shown that there is but little doubt that it is a native of our Western and Southern States. We have noticed that in some Western agricultural papers the plant is mentioned as the "Jerusalem or Brazilian Artichoke"; this supplementary title is needless, and leads to confusion. There are several seedling varieties, differing in the shape of the tubers and the color of the skin; besides the common white, there are purple, red, and yellow kinds.

"One Man's Meat is another man's poison," is an old proverb that is frequently illustrated in our correspondence. Recently we have had a number of letters relating to cultivating, and getting rid of the same grass. We have been asked how to cultivate and how to destroy Bermuda grass so frequently, that this is no novelty, but it seems strange to get letters from Washington Territory, asking how to get rid of "Blue Grass," while within a day or two we have inquiries from Eastern States, asking how to establish a meadow of it. In March we described the Guinea-grass, which is much esteemed in Florida; and letters have come from the South, asking where it can be procured. But a friend in Louisiana has quite too much Guinea-grass, and his letter asks how to get rid of it. All this shows what a wonderful variety there is in our agriculture, and that a plant is valuable or otherwise, according to circumstances.

The Hardin Method of Butter-Making.—The method of setting milk for cream, known as the Hardin Method, in which a close refrigerating closet with ice and deep pans are used in summer, is becoming popular in both large and small dairies. Its economy of room is a great advantage, making the use of a special milk-house or room in small dairies unnecessary. Recent experiments, made by Eastburn Reeder, of Mount Hope, Pa., who has heretofore favored shallow pans, have resulted in favor of the deep pans and low temperature of Mr. Hardin's method, and Mr. Reeder admits the inferiority of shallow pans, as compared with the deep pans. It is possible that the low temperature and close closet of the Hardin system may have some beneficial effect, at any rate the advocates of the deep can system are greatly reinforced by the results of Mr. Reeder's experiments. During the fall and winter the use of ice for cooling, or fire for warming the milk, is unnecessary in the Hardin system, and those who have adopted it will be spared the trouble and expense of these additional appliances to the ordinary method of setting milk for cream.

The Tribune Horticulturally and Agriculturally.—The "N. Y. Tribune" has long been a source of amusement by reason of its horticultural items. A collection of those published during the past six or eight months would be quite as funny as anything in Josh Billings' "Alminax." On March 14 it informs us that "Florists are said to have been 100 years perfecting the Lily of the Valley," which will be news to florists. Some time ago it informed us that "Sago palms, now so much desired for in-door decorations, are natives of Southern Egypt,"—to which we would say, firstly, that, however much the Sago Palm might be "desired," it would be very difficult to gratify the desire, as we do not know of any on sale in the country; secondly, that it is not a native of "Southern" or any other part of "Egypt," and, thirdly, that the plant that this writer is evidently trying to talk about, is not a *palm* at all.—Its agriculture is as droll as its horticulture. It says: "Not in all climates can spring wheat be raised [which nobody can deny]. But the golden grains which lie hidden in the ground through a long and dreary winter, bring forth not the less richly when the glad spring-time comes." That is very pretty talk, but mighty poor farming. We wonder if the "Tribune" folks have the seed of that wheat with "golden grains," and stays all winter in the soil. In the same number with this absurdity it sets forth the value of its Weekly, which, of course, has all the best things of the daily, as a rural paper.—*Later.* The above was crowded out last month, but we do not regret it, as it allows us to add information which "is important if true." The "Tribune" says: "Kale is the most plentiful salad now in the market."—Kale salad! The "Tribune" is the only paper that had the news, and probably the only one in which this could be published.

Heavy Fleeces.—"M. J. P.," Salem Co., N. J. The Merino sheep produce the heaviest fleeces, some of them yielding 18 to 30 pounds of wool, in the yolk. The Cotswold yield the next heaviest fleeces, these being from 11 to 18 pounds. The best market lambs are a cross of Southdown with Merino, and the heaviest lambs a cross of Cotswold with Merino.

Heavy Hogs in New Jersey.—A correspondent from Burlington Co., N. J., gives the following weights of hogs, recently slaughtered in his neighborhood, as follows: Richard Harrison, living near Recklesstown, slaughtered 28 hogs, which weighed as follows: 505, 575, 575, 577, 577, 579, 579, 579, 583, 585, 585, 595, 595, 603, 605, 605, 619, 619, 629, 635, 639, 655, 665, 677, 709, 715, 735, and 749—making an aggregate of 17,338 pounds, and an average of 619 3-14 pounds. Joseph Carter, on the farm of Anthony Bullock, in the same neighborhood, killed 20 head, weighing as follows: 561, 565, 579, 591, 597, 601, 625, 649, 655, 665, 677, 695, 705, 705, 713, 721, 737, 774, 865, and 905 pounds. Total weight, 13,565 pounds. Average, 678¼ lbs. The five heaviest weighed over 4,000 lbs. Some of the last lot were 21½ months old.

Stable Floors.—"A.C.," Franklin Co., Mo. Plank floors are not injurious to horses' feet, if not too slanting. The floor should not slope more than one inch in 6 feet, which will give plenty of drainage. This will not strain the tendons, by throwing undue weight upon the hind legs. But if the rear half is of plank, and sloping, and the floor beneath the fore feet of earth, the front may be made lower than the rear, which will be the best form of floor. No earth floor can be kept clean.

Gathering Lucern Seed.—"C. D. J.," Brighton, Mich. Lucern may be cut for seed at any time when the seed is ripe. It is not cut as clover is, once for hay and a second time for seed, but is kept for cutting fodder or hay for many years continually, and not permitted to seed. It should, if manured, last eight or nine years when thus cut, but if allowed to ripen seed, the plant would probably be exhausted much sooner. The seed for an acre costs only $6 or less; 8 to 12 lbs. being used, at 50 cents a pound.

The American Rotary Plow.—"E. W. D.," Bloomington, Ill. The plow referred to is as yet only an experiment, and we know little of its merits, except from newspaper reports given by interested parties.

Bommer's Method of Managing Manure.—"D.," Bloomington, Ill. The method of making manure described in Bommer's pamphlet, preserves everything of value in the materials used, and saves all the ammonia; it also works up waste materials into a condition for profitable use. The method is applicable everywhere, in the West as well as in the East.

Preserving Corn-Fodder.—"C. G.," Guilford, Ct. The whole process of preserving green-fodder by ensilage, is intended to prevent access of air to to mass. The success of the plan wholly depends upon this. If air is admitted, all is lost. Any plan, therefore, that does not exclude air, will fail. There is no better method than those described in the *American Agriculturist* of June, 1875, and October, 1873. The latter is a very simple, easy, and cheap method.

Bee Notes for June.

BY L. C. ROOT, MOHAWK, N. Y.

Just what the operations for the present month should be, will depend upon the honey-producing plants of the different localities. In most sections in this latitude, this will be the best time to expect swarms, and the best colonies, if left undisturbed, will probably swarm before the last of the month. In my own apiary, I endeavor to have my swarms nearly equal in strength. This may easily be done, by taking combs of brood from the best ones, and changing for combs from lighter colonies. The necessity of having hives and frames uniform in size is here very apparent. The combs not containing brood, which are taken from the weak colonies, should always be placed in the center of the heavy ones.

During the season of 1874, I continued this process of equalizing and building up swarms, until the 20th of July, before which time no surplus honey was taken. At this date, Basswood commenced blossoming, and I took an average of 100 lbs. from a hive during the remainder of the yield. Other years, a large part of the surplus honey would be taken, before the date in which the yield began in '74. I mention this to show the necessity of each beekeeper understanding his own locality, and the forage he may expect from time to time. I also desire to show the absurdity of the very common practice of some writers of fixing the date when swarms shall be made, boxes put on, etc. My advice would be, make the swarms when colonies are strong enough to spare them, and put on boxes when bees will commence work in them. One season it may be in June, another in July.

Questions and Answers.

"Is there no way to prevent Swarming?"—Where the honey is taken from the hive with the extractor, I seldom have them attempt to swarm. If run to box-honey it is more difficult to prevent it. Removing the old queen, and furnishing them with a new one, will have the desired tendency. Natural swarms may be prevented if artificial ones are made in time. Full directions for this operation, may be found in Quinby's "Beekeeping," page 188. [Price $1.50, post paid, by the Orange Judd Company.]

The Bee-moth.—"Is there any preventive for the moth or miller?"—"If bees were placed 20 or 30 ft. above the ground, would the miller affect them as much as if they were nearer the ground?"....The best preventive is to keep swarms strong in bees. It is a generally acknowledged fact that the Italians defend themselves from the moth much better than the natives. I have never known a good strong swarm to be much disturbed by the moth. Swarms usually become reduced from some other cause, when the moth takes advantage of their weakness, and is charged by the inexperienced with being the primary cause of their destruction. The fact that to secure strong swarms, a position near the ground is preferable, is proof that it would be a hindrance rather than an advantage to raise them, to avoid the ravages of the moth.

A Room for Bees.—"I have fixed a room for bees 3 ft. high, 4 ft. wide, and 5 ft. long, on the east side of a wood shed, and just under the roof. I have left a hole 15 in. square through which to take the honey out. I desire to put the first swarm in it and prevent swarming."....There is an impression that a place arranged as above is very desirable for bees. There is no reason why bees can be better prevented from swarming, in such a place, than in a properly arranged hive. If a place of this kind is to be used, a door should be made at one side, large enough for a person to pass in, and closed-end frames, or a hive should be so arranged that the space the bees occupy may be enlarged or contracted at pleasure. My opinion is, that one reason why bees do not swarm when placed in one corner of a room as above described, with no means of confining the warmth to the brood-chamber, is the fact that they are placed under so many disadvantages, that they cannot get strong enough in numbers to swarm.

The Best and Cheapest.

BUCHAN'S Cresylic

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A Saponaceous Compound with Cresylic and Carbolic Acid.

For Preventing and Curing the Scab and all parasitic diseases of the Skin. Will destroy Lice, Tics, Fleas, &c.

Is beneficial to the general health and condition of the flock. The use of this **DIP** will cleanse and whiten the Fleece—also increased the growth or weight sufficient to be a full equivalent for the cost of the Compound.

This Preparation is Warranted to be **entirely harmless** and **free from all poisouous** Compounds, and will positively do all that we claim for it. Put up in packages of 1, 5, 10, 50, 100, and 200 pounds.

Buchan's Cresylic Ointment.

Certain Death to the Screw Worm or Grub.

It not only destroys the worms, but cleanses and quickly heals up the offensive sores made by it.

No fly will attack a wound to which this preparation has been applied. Sheep which rarely recover from the attack of the worm under the ordinary treatment, are quickly cured by this application. In solution, this ointment will be found invaluable for healing Saddle Galls, and all abrasions of the skin of animals.

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Fine Milch Cows always on hand.

Ferrets at five dollars each. Swan and Deer wanted.

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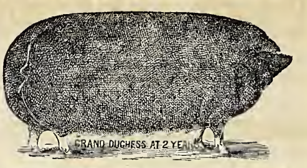

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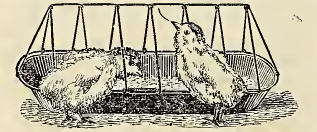

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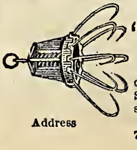

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Read Seed advertisement, page 231.

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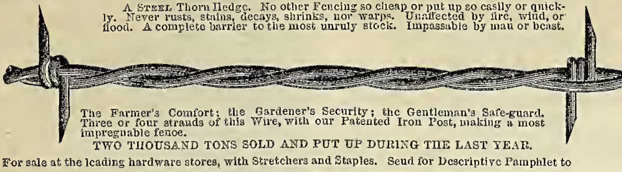

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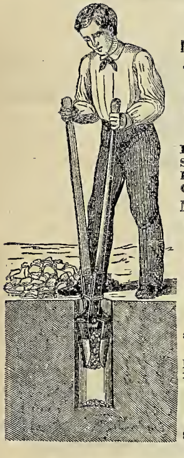

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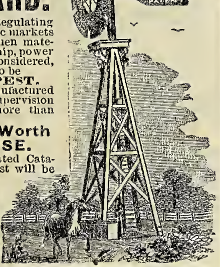

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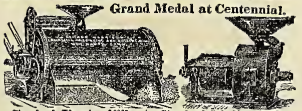

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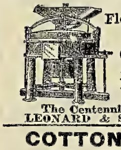

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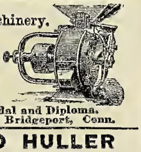

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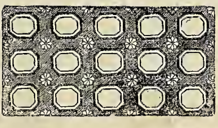

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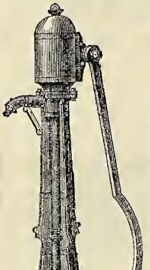

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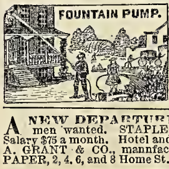

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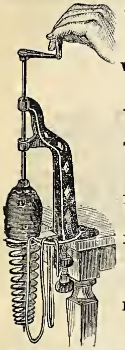

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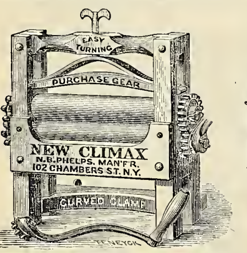

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THE PURCHASE GEAR

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Be satisfied as to the merits of a *Purchase Gear* before buying an *old-fashioned* cog-wheel wringer. Sold everywhere.

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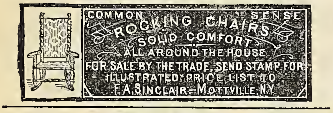
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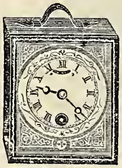

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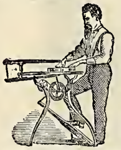

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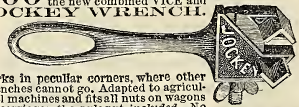

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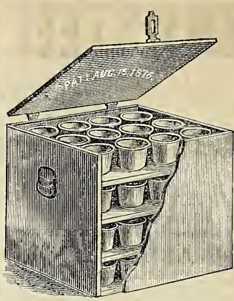

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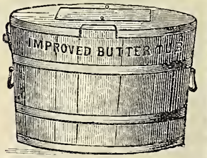

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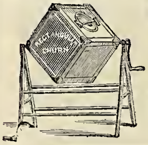

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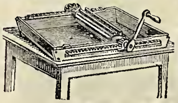

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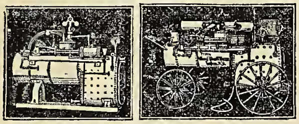

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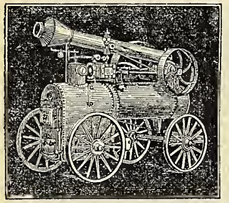

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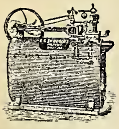

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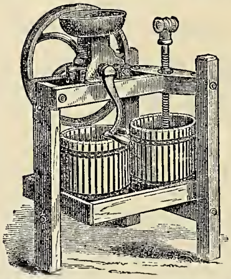

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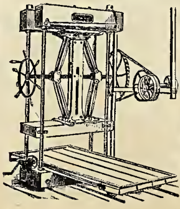

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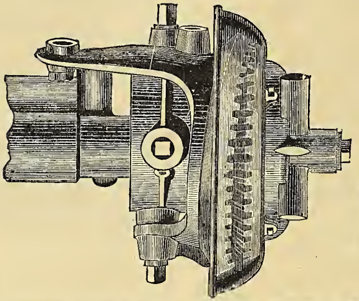

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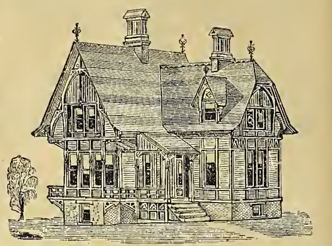

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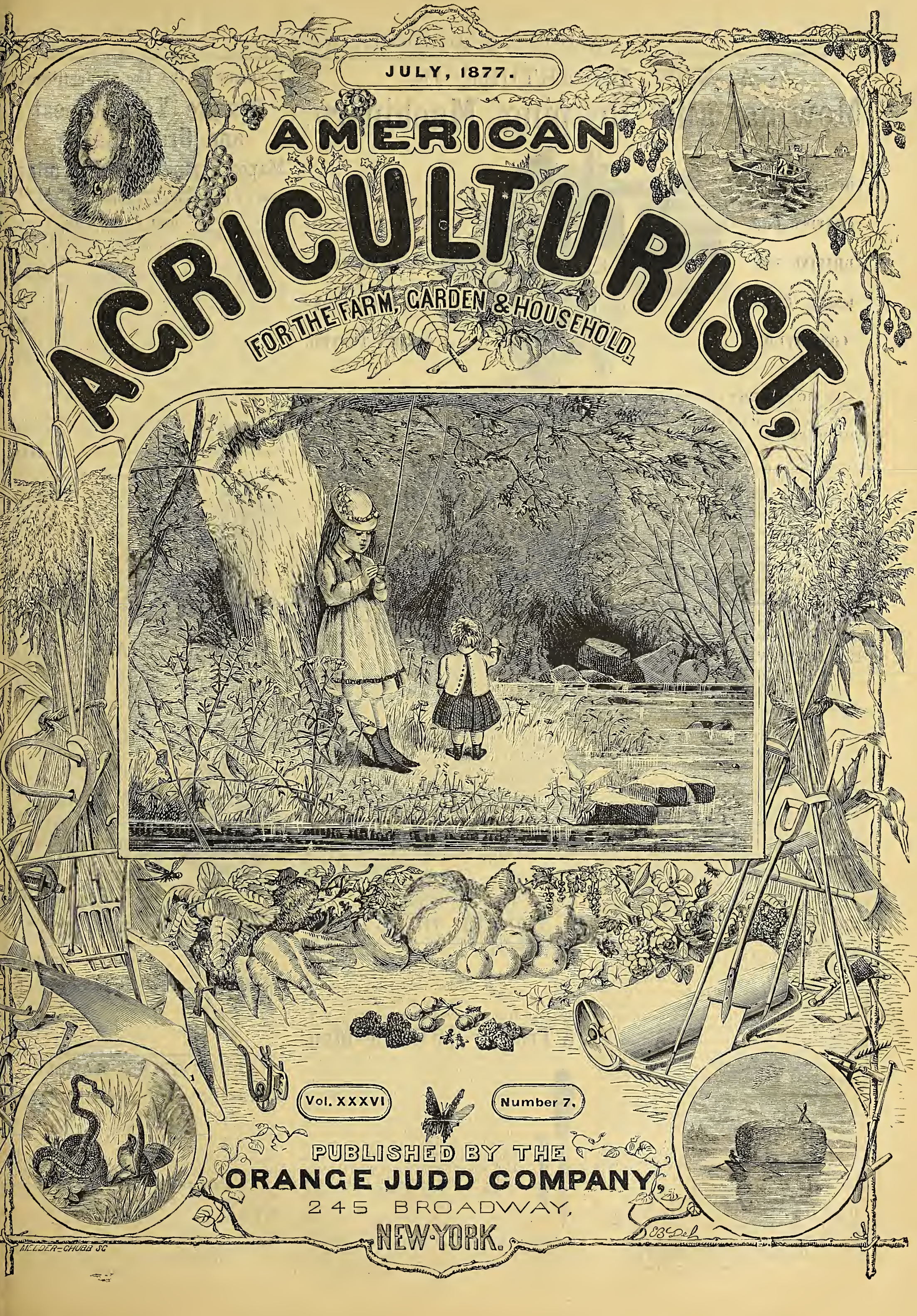

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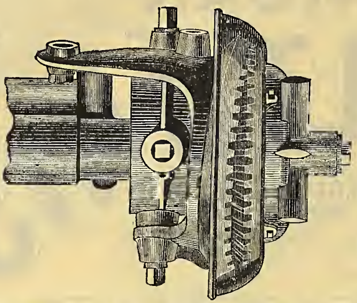

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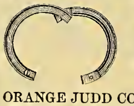

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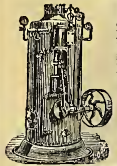

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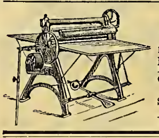

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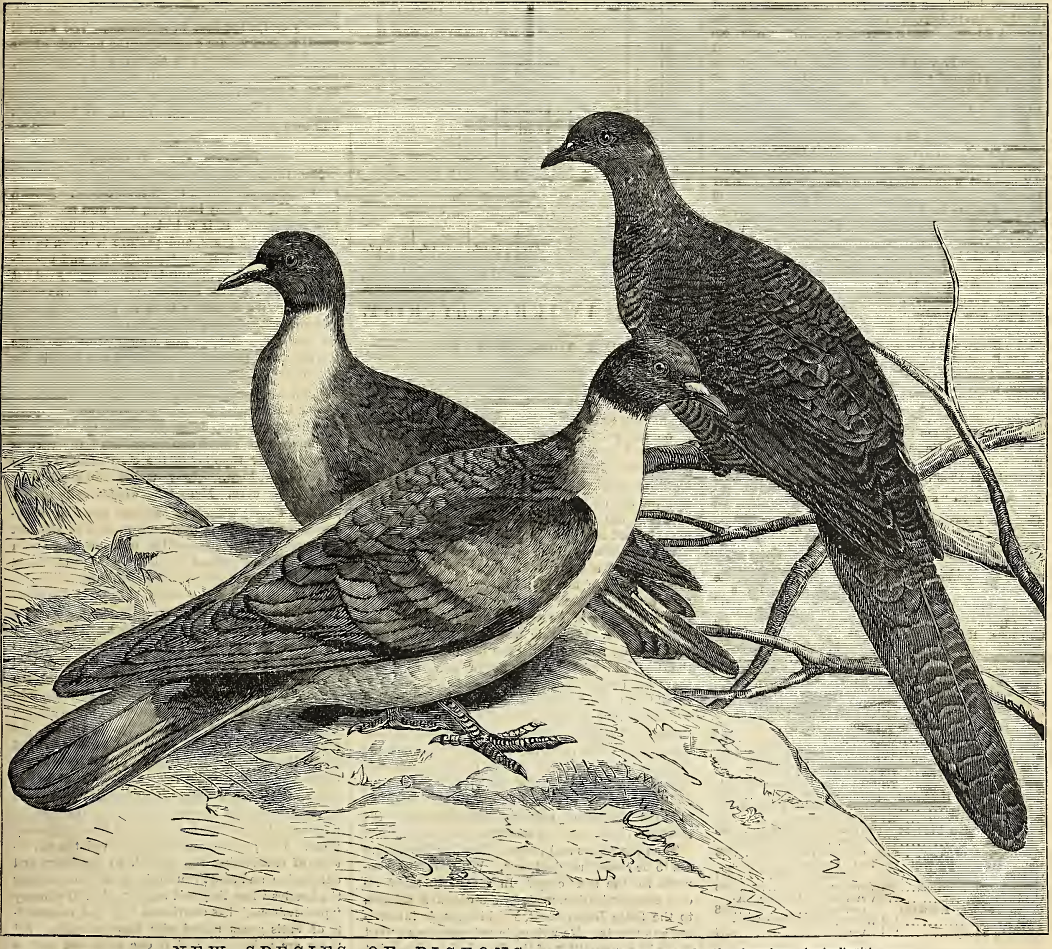

NEW SPECIES OF PIGEONS.—*Drawn and Engraved for the American Agriculturist.*

In 1832 an engraving was published of a new species of pigeon which was discovered in India; but the drawing being made from a dried skin, was not a satisfactory one. Very recently, live specimens were secured and imported into England for the Zoological Gardens at Regents' Park, London, from which an accurate engraving was prepared and published in the "London Field." This species, named *Columba leuconota*, has the head and the upper part of the back black, (as shown in the engraving), the lower part of the neck, lower part of back, rump, and under surface, are pure white; the upper part of the back is brownish gray; the wing coverts are light gray; the quills are brown; the tail coverts are black, and the tail is black, with a broad white band across it. Mr. Tegetmeier, the well known poultry fancier, says of it:

"To those who have paid attention to the production of varieties this pigeon is particularly interesting. It is so rare, that a single specimen, until the present year, has never been seen alive in Europe. It closely resembles several of our domesticated varieties of the *Columba livia*, and the markings could be produced by a few years careful selection by any skilled pigeon fancier. The colored head, white body, bars across the wings, peculiar coloration of the tail, may all be found in known varieties, and the combination of them could be effected without difficulty. In fact, so like is this bird to many of the known varieties, that it would be difficult to persuade many fanciers that it was a wild species, and not a domesticated variety."

The other species represented in the above engraving is very little known. It inhabits the island of Celebes in the Indian Archipelago. The size of the tail, and some other specific differences, separate it from the genus *Columba*, and give it a place in a separate one known as *Macropygia*, this particular species being *Macropygia leptogrammica*. It is a remarkably elegant bird, with beautifully banded plumage. It is an unfortunate circumstance that only a single specimen has been obtained.

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The Peculiarities of Jersey Cows.

—"E. D. D.," Ezota, Minn. The Jersey cows are noted for their precocious milking capacity. Having been bred so long with a view to early and copious production of milk of great richness, it is not at all strange that the Jersey heifers should show great precocity in this way. In one herd known to us, there were recently two virgin heifers giving milk, and taking their place at the pail with the cows. Another, a yearling, also known to us, was brought to milk by merely handling the udder and teats. It is nothing to be alarmed at, therefore, that a Jersey heifer should make a good-sized udder long before she is due to calve. In such a case it would be well to avoid exciting the organ, either by handling or by stimulating feed.

Calendar for July.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	S	4 27	7 41	10 52	4 32	7 35	10 52	4 38	7 29	10 51
2	M	4 27	7 40	11 10	4 33	7 35	11 11	4 39	7 29	11 12
3	T	4 28	7 40	11 27	4 34	7 35	11 30	4 39	7 29	11 32
4	W	4 28	7 40	11 50	4 34	7 34	11 53	4 40	7 29	11 57
5	T	4 29	7 40	morn	4 35	7 34	morn	4 40	7 28	morn
6	F	4 30	7 39	0 16	4 35	7 34	0 22	4 41	7 28	0 26
7	S	4 30	7 39	0 50	4 36	7 34	0 56	4 41	7 28	1 3
8	S	4 31	7 39	1 34	4 37	7 33	1 42	4 42	7 28	1 49
9	M	4 32	7 38	2 31	4 37	7 33	2 39	4 43	7 27	2 47
10	T	4 32	7 38	sets	4 38	7 32	sets	4 43	7 27	sets.
11	W	4 33	7 37	8 37	4 39	7 32	8 32	4 44	7 26	8 27
12	T	4 34	7 37	9 10	4 39	7 32	9 6	4 45	7 26	9 2
13	F	4 35	7 36	9 36	4 40	7 31	9 33	4 45	7 26	9 32
14	S	4 36	7 36	9 59	4 41	7 30	9 58	4 46	7 25	9 58
15	S	4 36	7 35	10 21	4 41	7 30	10 22	4 47	7 25	10 23
16	M	4 37	7 34	10 44	4 42	7 29	10 47	4 48	7 24	10 49
17	T	4 38	7 34	11 9	4 43	7 29	11 12	4 48	7 23	11 16
18	W	4 39	7 33	11 37	4 44	7 28	11 42	4 49	7 23	11 47
19	T	4 40	7 32	morn	4 45	7 27	morn	4 50	7 22	morn
20	F	4 41	7 32	0 12	4 46	7 27	0 18	4 51	7 22	0 25
21	S	4 42	7 31	0 53	4 47	7 26	1 0	4 52	7 21	1 8
22	S	4 43	7 30	1 43	4 48	7 25	1 50	4 52	7 20	1 59
23	M	4 44	7 29	2 41	4 48	7 24	2 48	4 53	7 19	2 55
24	T	4 45	7 28	rises	4 49	7 23	rises	4 54	7 18	rises
25	W	4 45	7 27	7 56	4 50	7 22	7 51	4 55	7 18	7 47
26	T	4 46	7 26	8 21	4 51	7 21	8 17	4 56	7 17	8 13
27	F	4 47	7 25	8 37	4 52	7 21	8 37	4 57	7 16	8 35
28	S	4 48	7 24	8 58	4 53	7 20	8 57	4 57	7 15	8 56
29	S	4 50	7 23	9 16	4 54	7 19	9 16	4 58	7 14	9 17
30	M	4 51	7 22	9 34	4 55	7 18	9 34	4 59	7 13	9 37
31	T	4 52	7 21	9 54	4 56	7 17	9 57	5 0	7 12	9 59

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	3	4 18 ev.	4 6 ev.	3 54 ev.	3 42 ev.	3 12 ev.
New M'n	10	5 22 ev.	5 10 ev.	4 58 ev.	4 46 ev.	4 16 ev.
1st Quart	17	8 28 mo.	8 16 mo.	8 4 mo	7 52 mo.	7 22 mo.
Full M'n	25	2 35 mo.	2 23 mo.	2 11 mo	1 59 mo.	1 29 mo.

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1877.

Harvest is now nearly completed in many localities, and in others will be finished by the end of the month, or soon after. The yield has been, and is, on the whole, satisfactory. How to dispose of it to the best advantage, is now the serious consideration. There is sometimes danger of expecting too much from the fluctuations of the market, and the farmer who has sold his grain and safely pocketed the proceeds as soon as possible after harvest, and at a price that gives him a good profit, may look serenely at the ups and downs of a very irregular and speculative market. It is something to have peace of mind, and this the farmer who is ever trying to reach the very top of the market, never enjoys, and he often fails of reaching the highest price. Our rule has been, and is, to sell when we are ready, getting the best prices going at the time, and taking a number of years together, there has been no reason to regret this course. It should not be forgotten that, from the moment wheat or other grain is harvested, until it is sold, a number of active and dangerous enemies are busy destroying it, or reducing its value. Besides the ordinary shrinkage from drying, there are the ravages of rats, mice, weevils, the grain moth, mold, and the danger of heating; all these are to be guarded against, or suffered, and at the best, the loss from one or more, or all of these, is considerable.

Then the hopes and preparations for the future are to be considered just now. What are the prospects for the next crop? In regard to this a recent communication, made by our consul at Odessa, to the State Department, Washington, is interesting and timely. He writes, in reference to a report made by a committee of the Board of Trade of that Russian city, on the subject of American competition in the European grain trade. The conclusions of this committee are as follows, viz: "that we, (the Russians), have changed positions with the United States. She has now our former position in the English market, and we must be satisfied with quite a secondary position. What they chiefly prove, however, is the regular progressive movement of America. We cannot therefore hope that a prosperous harvest may turn the scale in our favor, and restore us to our former position; but we must believe that the United States will yet take a higher position among the grain producers of the world. It is impossible to calculate the amount of grain which America will be able to export, and which will render her so completely the controller of the London market, that we shall be utterly unable to compete with her. The cheapness and fertility of her virgin soil, her favorable climate, the high class of her agriculture, the substitution of machinery for human labor, the spirit of enterprise, and the aptitude of the Americans for organization, are so many proofs that our fears are well founded."—This is not strange to a thinking person. We have frequently pointed out the fact that this must be the inevitable result of our improved agriculture; just as we have frequently referred to a similar condition of things in regard to our manufacturing industry. It is mind that tells on work. Intelligent labor is the most productive and profitable, and, although the American farmers are not altogether so far advanced in their line as are the American mechanics in theirs, yet they are rapidly coming to the front as the best farmers and stock producers in the world, and our farm machinery is already by far the best in existence. The natural result is, that we are controlling the markets of the world, by displacing less skillful and intelligent, and less enterprising competitors. Now there can be no danger in enlarging our production to meet the large foreign demand. By and by we can fix our own prices.

Hints for Work.

The Wheat Stubbles.—Generally the wheat and rye stubbles are seeded to grass or clover. After a dry spring in many localities, the new seeding is thin and poor. It is a bad practice to turn stock upon this light grass, and pasture it down to the bare ground; yet many "penny-wise and pound-foolish" farmers will do this very thing. Avoid it by all means. On the contrary, give a light dressing of some active fertilizer, such as Peruvian guano, or Bowker's or Mapes' fertilizer, prepared expressly for grass and clover; this would greatly advance the crop, and probably give a good bite later in the fall, instead of a poor one now.

Corn.—We keep the cultivator going until a horse can no longer pass through the rows, and we question if it would not be greatly better to use one of the many useful hand cultivators until the corn is glazed, rather than lay by the corn when it is two or three feet high. Always muzzle the horse when cultivating corn. Many raise what are known as

Catch Crops; these are turnips, peas, or buckwheat, sown between the rows of corn at the last cultivating. Sometimes this may be done with profit. If the ground is rich, and weeds would grow, there may as well be something useful grown in place of them, and we have had 500 or 600 bushels of white turnips per acre, grown in this manner, which were worth nearly as much as the corn. If such a crop is grown, it should be put in as well as possible. To sow turnips broadcast, is not so well as to sow in a row with a seed drill or by hand. An Albany seed-sower, or a garden seed-drill, may be run in the center of the row after the last working. Then, being shaded, and the ground moist, the plants grow rapidly, and need not be trodden out when the corn is cut. If peas or buckwheat are sown, two drills may be made for each corn row.

Potatoes.—Early potatoes should still be protected against the beetle. Late potatoes must necessarily be closely looked to, lest the late broods destroy them. The present season has proved the advantage of stimulating the growth by fertilizers and cultivation, and also the usefulness of hand-picking the beetles when they first appear. A trial of many "pest-poisons," has convinced us of the superiority of Paris green mixed with flour or water. All these are poisonous, and if one must use such a material, the most effective may as well be chosen.

Root Crops.—Thinning the crop should be rigorously performed. Every surplus plant should be treated as a weed, which in reality it is. Ruta-bagas may still be sown, if some active fertilizer is used to start a quick, vigorous growth. The ground for white turnips should be prepared for planting at the end of this month, or early in August. The White Globe and the "Cow's Horn," turnip, are the best for general use. Of ruta-bagas, the Purple Top Swede is one of the best, if not the best.

Hay.—Clover that has not yet been cut, has lost much of its value. No crop suffers more by late cutting than this. Early cut grass is also better than that left to ripen its seed. Haying should be pushed as fast as possible; when the crop is ready, we do not delay on account of the weather. Standing grass will suffer from heavy rains or storms more than that which is cut.

The Proper Use of Machinery is a very important matter. On many farms it would pay better to hire the work done, than to buy all the necessary machines. Where machines cannot be hired, then they must be procured some other way; but no farmer can now afford to work without them. It is a very general fault in cutting hay, to leave a very short stubble; this is objectionable, as it greatly injures the after growth.

When Hay is Cut, it is best to cure it as fast as possible. If the weather is unfavorable, the crop should be put in large cocks as soon as it is cured, and if protected with hay-caps, may stand several days without injury. When there are a plenty of caps at hand, we would cut and cure the whole before hauling any, unless for good reasons. When the weather is damp, to cut in the afternoon, cure the next day, and cock the hay before evening, will be found a good practice. Then the cocks may be opened the next morning, and after a little sunning, may be put in. In dry weather, cut in the morning, turn over at noon, cock before night, and haul the next day. Hay may be easily over-dried.

Loading.—Long, wide, and low loads, are better than short, narrow, high ones. They are more easily loaded and hauled, and the pitcher's work is easier. A boy to drive will save time; a loader should give all his attention to making his load, and as soon as the last forkful is pitched, the wagon should move on to the next cock, not losing a moment. In harvesting, time is of the greatest value.

Wheat.—When the grain is so hard that, crushed between the finger nails it breaks into flour, and shows no sign of dough, it is in condition for cutting. When there is a heavy harvest, it is better to begin cutting a little before this, rather than leave it later. The grain to be kept for seed, should be cut the last. The stubble should be cut as low as possible. The best straw is near the root. A self-binding harvester is a valuable piece of machinery, and can be appreciated by a farmer who has been annoyed by itinerant laborers, who demand excessive pay in the hurry of harvest.

Barley.—This crop needs careful harvesting, as it is easily damaged and lessened in value by bad weather. When the weather is fair, the barley may be cut with the reaper and left on the ground until the next day, when, after having been twice turned, if free from weeds, it may be carried to the barn. To cut and bind this crop, is better than to cut in swaths and load with barley forks.

Oats.—Oats may be cut while the top of the straw is somewhat green. Else it should be cut early in the morning, left on the ground all day, and raked and bound late in the afternoon. This avoids shelling. The sheaves should be stooked as fast as bound, and the stooks should be well capped, as this crop needs to be well cured before it is housed.

Summer-Fallows.—A few farmers adhere to the old system of summer-fallowing. With our plentiful choice of cultivated crops, corn, beans, fodder corn, potatoes, and roots of different kinds, and of artificial fertilizers, there is no excuse for keeping the ground idle for one season. In our climate weeds are easily killed, and we seem to have no need to continue the practice of summer-fallowing. If it is made, however, the present month is a time when it should be thoroughly and deeply worked, or kept entirely free from weeds by harrowing.

Top-dressing Meadows with fine manure, as soon as possible after the hay has been cut, will be very effective in producing a close, thick bottom growth, which will shade the ground and prevent drying.

Fodder Crops, such as corn, millet, or Hungarian grass, may be sown the early part of this month. There is a light hay crop in many places, and one or another of these fodder crops will be very useful. It will not pay to grow a crop for fodder, unless the soil is made rich.

Horses need to be kept clean and well curried; washing the legs is advisable, and the stables should be frequently cleansed, to keep down the troublesome flies. When at work in the fields, it will ease them much from this pest to sponge the legs and flanks with water mixed with one thousandth part of carbolic acid. Grass alone will not support a working horse. Four quarts of oats, corn, and wheat-bran, ground together, with a bushel of cut hay, will be only moderately good feeding along with good pasture at night.

Milking Cows.—If milk and butter are expected, now that pastures are getting short and dry, some extra feed must be given. At least two quarts of the mixture above mentioned, should be given to each cow, along with some cut hay or green fodder. Green fodder alone is not worth much for butter, although it may increase the milk.

Sheep and Swine can care for themselves at this time, if plenty of water, fair pasture, and shade are provided. A young ram and boar of some good breed, should be secured now. Breeders can afford to sell cheaper now than a few months later.

Sundries.—A coat of paint on the homestead, barns and stables included, and the fences, adds much to the value of the farm and durability of the buildings. A very cheap and desirable fire-proof paint, which answers the purpose of the most expensive kind, is well adapted for use on the farm and in village homesteads. This is Johns' Fire-proof Asbestos Paint. It is conveniently put up in kegs ready for use. Haying machinery should be cleaned and put away as soon as done with. Give the inside of stables, poultry houses, and pig-pens, a coat of hot lime-wash, and the cellar should not be forgotten. Weeds about fences and buildings should be cut down before they seed, and carted to the compost heap. See that what needs to be done is done in time.

Notes on Orchard and Garden Work.

If the cultivator in either of these departments finds a time when he can say, "there is nothing to be done," his experience has been quite different from our own. Still, July and August are the least driving months, and those in which a vacation can be taken with less detriment than in any others. No better investment of time and money can be made than in judicious travel. By judicious travel we do not mean going off for the mere sake of going, without any object in view; an excursion within 20 miles of home may be made far more profitable than a trip half across the continent. Avoid fashionable routes and expensive "watering places;" if a mere change of scene be desired, there are numerous charming spots all over the country that are not frequented by crowds. If one would join profit with pleasure, let him visit some locality noted for its orchards, its small fruits, its market gardens, or whatever culture he is himself interested in. Intelligent cultivators, in whatever branch, are always glad to see others who are interested in the same pursuit with themselves, and by seeing what others are doing, and their methods, one gets new ideas, and if he does not learn anything by which he can profit, he will at least come back all the more contented with his own work and ways; and after all, one of the great benefits of travel is to make one satisfied with his own lot and his own home.

Orchard and Nursery.

There is scarcely a hint in last month's Notes that is not as applicable now as it was then, and some are of sufficient importance to warrant our recalling them.

Young Trees, will meet with their greatest trial this month and next, and some that made no growth early in the season will require great care to save them. As a general thing it does but little good to water trees that seem to be at a stand still; with but little foliage, there is slight demand upon the roots; a mulch, to retain the moisture of the soil, will answer much better than watering; if the surface soil be kept light and mellow by frequent stirring, it will serve as a mulch. It often helps a languishing tree to protect its trunk, or stem, from the scorching effects of the sun. This may be done by binding some moss lightly about it; by placing a handful of straight straw against the sunny side, and fastening it there with a string or wisp; or by a wooden shield, made by tacking two thin boards together to form a **V** trough, which is set against the tree.

Thinning.—No matter how thoroughly the first thinning was supposed to be done, the probabilities are that too much fruit is still left, and that a second thinning is needed.

Insects are rather fully discussed in last month's Notes, and he is fortunate who finds none demanding attention. Many suppose that *the curculio* attacks the fruit only just after it is set, while in fact it keeps at work nearly all summer; the jarring of the trees should be continued so long as any insects are caught; and afterwards at intervals throughout the season.—*The Slug*, mentioned last month, is usually more abundant now; we see White Hellebore, the poison used for currant worms, is recommended to destroy this. We have not tried this, as cheaper means are effective. The caterpillar, for such it really is, has a thick, adhesive covering of slime, and any powder will stick to it; the least dusting of lime kills the insect, and if fine dry earth or road dust be applied abundantly, it will adhere and makes a covering that will cause the insect to let go its hold and drop from the tree. In enumerating the most troublesome insects last month, we inadvertantly omitted

The Codling Moth or "Apple-worm," which in some localities is the orchardist's worst enemy. The moth, which works in the night, deposits eggs in the blossom end of the fruit as soon as it is set; the young, caterpillar or "worm," eats its way to the center of the fruit and there lives, comes to maturity in a few weeks, leaves the apple, finds a hiding place, spins a cocoon, and in about two weeks comes out as a moth, which in turn goes to the fruit, lays more eggs, and thus a second brood is raised, these spin a cocoon, but do not appear as moths until the next spring. Much of the infested fruit falls, and if swine are not pastured in the orchard, the fruit should be picked up and fed out, or otherwise destroyed. Many insects are thus killed; many others may be caught by affording the "worms" a hiding place where they can spin. Several contrivances, patented and otherwise, have been proposed; the most effective and simplest, is a band of woolen cloth, about 5 inches wide, and long enough to go around the trunk and lap sufficiently for both ends to be fastened by a single tack. Cheap straw paper, folded to make three thicknesses, is used by some instead of cloth. The bands should be put on, half way between the ground and the branches, in the latter part of June; the first worms will usually be found under them the first week in July; the worms are to be crushed and the bands replaced. The bands should be taken off, examined, and the insects killed every 10 days all through this month and next. If this simple remedy were closely followed up by the fruit growers of a neighborhood, the insect would soon cease to be the serious pest it now is—but with this, as with most other insects, there should be a combined effort.

The Black Knot appears on the plum and some cherry trees, forming an ulcerous-looking excrescence of various sizes. Every now and then some one announces as a discovery, that this is not produced by an insect, but is a fungus; this statement has recently been made by an editor who ought to know that the knot was described as a fungus by Schweinitz about 50 years ago, and that the *American Agriculturist*, some 15 years ago, published some new observations, with engravings, showing the structure of the fungus. Whenever this appears it must be removed; if discovered early, just appearing through the bark, it may be cut out, but generally it has made such progress that the limb must be taken off. Burn all that are removed.... The chief obstacle to pear culture is

The Blight, a disease so important that it is discussed at almost every gathering of fruit growers. Many talk wisely and present their "theories," as they call them, but none really *know* anything about it. It is a disease that only makes itself known by the death of the patient. A small limb, a large one, or the whole tree, apparently in good health one day, is dead the next. All that can be done is to cut away the dead part, to sound wood, even if it takes the whole tree and burn it. It will be disastrous in a locality for a while, and then disappear as mysteriously as it came.

Early Apples and Pears for market should be picked while still hard, they mature and decay quickly; they are best suited to a near market.

Peaches in the great peach counties of Delaware and Maryland promise a very heavy crop. In years of abundance, inferior fruit will not pay its expenses; extra care in selecting and packing is especially necessary when the crop is large.

Fruit Garden.

Most of the insects that are destructive in the orchard are to be guarded against in the fruit garden, while certain of the small fruits have their special enemies.

Strawberries.—In but few localities does the season extend into the present month. The treatment of the plants when the crop is off will depend upon the system of culture adopted. In fields where alternating beds are made, the spaces that have served for paths are manured and plowed, and the runners allowed to occupy them, and when the plants are well established—usually in September—then the old plants are plowed under. By this treatment the plants bear but one crop of fruit. In garden beds, where the plants are in separate stools, or have been allowed to fill in between the original plants to make a solid row, the mulch is removed, a dressing of fine manure forked in, and the mulch replaced; during the remainder of the season the runners are cut off as they grow, and the few strong weeds which make their appearance through the straw are pulled by hand.

Raspberries follow close upon strawberries, and as they are always biennial, the crop of next year will depend upon the care given to the plants this season. With the ordinary kind that throw up new stems from the root, or sucker, the shoots should be selected for next year's bearing canes, and all others cut off. There is nothing gained by letting the shoots grow tall; if stopped at three, or at most four feet, according to the vigor of the variety—which is done by merely pinching out the growing point or tip, with thumb and finger, the energy that would have been expended in producing a cane 6 or 8 feet high, is diverted to forming branches, and by the end of the season will be a stocky, branched bush, that will require but little support. The canes that have borne this year, will not bear again, but will be dead at the end of the season. Cultivators differ as to the proper time for removing these canes; some think that if they remain they contribute to the growth, and help strengthen the root, and do not cut them away until late in the fall. Whatever gain there may be is, in our opinion, more than offset by the injury in crowding the new shoots and preventing their proper developement, hence we cut out the old canes as soon as the fruit is off.

Black Cap and Purple Canes, do not throw up suckers, but their new canes come from the base of the old plant, and the old fruiting branches should be cut away, while the new shoots that are to bear next year are to be cared for, especially their growth in length should be stopped, and branching induced. Of course, if it is desired to propagate them, the shoots must be allowed to grow to their full length, as they are only multiplied by taking root at the tip, later in the season.

Currants for jelly should be picked as soon as they are fairly red, but for table use they are much better if allowed to get dead-ripe. If one has but a few bushes to care for, the new shoots not needed, and the pinching of too rampant growth, will anticipate much of the fall pruning.

Grapes.—In all well trained vines, the laterals—the side shoots that appear in the axils of the leaves, are kept pinched back to one leaf. When they first push, pinch off all but one leaf; after a while the bud in the axil of that leaf will push; pinch that growth back to one leaf; a third may start, but seldom more.—Pick off the large beetles, and the various caterpillars; they are seldom so numerous that they can not be hand-picked.—Watch for mildew, especially in a warm, moist time, and dust thoroughly with sulphur.—Vines may be propagated by layering the shoots of this season's growth, when they have become hard enough to handle without breaking; bend down the shoot and place two or three joints of it—the leaves being removed from these joints—in a small trench a few inches deep; the end of the shoot may be tied to a stake. It is a good plan to lay a flat stone over the buried portion, as this keeps the earth moist and thus favors the formation of roots.

Kitchen and Market Garden.

So long as the growing season lasts, there will be weeds, and so long as there are weeds there is work. Some writers insist that weeds are by no means an evil, as without them the soil would not get the needed stirring. See Note last month on the use of the rake in weed-killing. Weeds or no weeds, the

Use of the Hoe or some equivalent implement in a dry time will help the plants greatly, and those well cultivated will resist the drouth much better than the neglected ones. Many of

The Early Crops, such as peas, early cabbages, early potatoes, etc., will be off, and the land should at once be made ready for something else. In market gardens land is too valuable to lay idle, but it is not rare to see, in private gardens, a piece allowed to run to weeds after the crop is off. If not wanted to produce supplies for the family, it is better to grow something that can be fed to the cow, the pigs, or even the chickens, than weeds.

Succession Crops of several things may be sown. Beans, Beets, Carrots, Cucumbers, Sweet Corn, and later, Radishes and Spinach, are among the things that may be sown to fill cleared places, and late Cabbages and Cauliflowers, and sweet herbs may be transplanted to them from the seed bed.

Beets.—Many persons sow early beets only in spring; the Egyptian is so much better in quality than any of the late kinds, that by successive sowings, we have them all the season; besides the beet greens—the thinnings—are most acceptable when hot weather puts a stop to spinach.

Celery is to be set out from the middle to the end of the month. We have long ago given up growing it in trenches; set the dwarf kind six inches apart, in good soil, and keep cultivated during the season, until the time to earth up. Those who prefer the use of trenches, can make them 15 inches wide, and a full spade deep, taking care to have some good soil at the bottom, which should be well manured; set the celery in two rows, 8 inches apart, and the plants at 6 inches in the rows.

Corn.—In the latitude of New York, sweet corn rarely gives a crop if sown later than the first part of this month; in exceptional seasons it will mature if put in as late as the middle of the month. We usually risk a few rows of late sown, as the fodder will pay for the trouble if we fail of the ears.

Cabbages and Cauliflowers should be set out by the middle of the month; rows 3 feet apart with the plants every 2 feet apart in the row, is the usual distance where they are worked by horse. See that the plants are perfect; sometimes the growing point is injured or "blind," and such will never head; in dry weather it is well to mix up cow manure, loam, and water, and dip the roots in this before setting. Press the earth well down around the roots, to have the plant firm.

Egg Plants.—Give frequent hoeings. Potato bugs are very fond of them; the plants are usually so few that the bugs may be hand-picked; on large lots Paris green may be used. Keep the fruit from the ground by a wisp of hay, or mulch the bed.

Squashes, Melons, and Cucumbers, are all liable to attacks of insects of the same kind. The worst enemy is the "borer," which enters the vine near the root, and if not discovered early and cut out, destroys the whole plant. Covering the vine with earth for several joints next the root, is said to be a preventive. Before the plants get too large, eggs of the squash-bug may be found on the under side of the leaves and killed.

Tomatoes.—Keep tied to the trellis; cut away all superfluous growth; look out for the great green worm, it takes leaves and young fruit, and a single one will make sad work with a vine; the droppings usually show where the enemy is, catch—it can't bite or sting—and crush.

Sweet Potatoes; keep clear of weeds, and move the vines to keep them from taking root.

Turnips.—The ruta-baga sorts should be in, in this latitude, by the middle of the month. For family use the Long White French is vastly preferable to any of the larger growing kinds. When large enough, thin to six inches.

Flower Garden and Lawn.

The work here will be confined to what may be called "keeping," but it comprises a great variety of operations, most of which have been pointed out in former months, and need here but a brief reminder....The grass on the lawn should be mown when it needs it; those who make it a rule to mow regularly at stated intervals, make a mistake; in a hot, dry time, when the grass is making no growth, it is best let alone, else the roots may suffer.... Edgings must be kept neatly cut.....Shrubs and perennial plants should have the clusters cut away as soon as out of flower, unless seeds are wanted....Dahlias, gladioluses, lilies, and other plants will need stakes, which should be so placed as to show as little as possible....Bedding plants in masses, need pinching and cutting to preserve a uniform hight; in ribbon planting the effect is spoiled unless the lines are kept distinct, which may be done by proper cutting....Insects of various sorts will annoy, and one of the greatest troubles, not only on roses, but other plants, is the rose-bug, for which there is no help but catching and killing. In early morning they are inactive, and easily shaken off into a dish of water....Propagate shrubs, such as Weigelas, Forsythias, and other easily rooted things, from the just hardening new wood, under a shaded frame.

Greenhouse and Window Plants.

Plants set out of doors for the summer, are apt to suffer from neglect. It would conduce greatly to their health to prepare a place for them, a mere frame of boards as wide as the hight of the pots; put down a layer of coal-ashes on which to set the plants, and then, having put in the pots to allow each plant sufficient room, fill in between them with coal-ashes. This will not only prevent drying out so rapidly, but avoid injury to the roots by the sun falling directly upon the pots—an unsuspected cause of much damage....This plan will prevent the plants from being thrown over by the winds, otherwise some other means must be devised....Most greenhouse plants need shade in the hottest part of the day, and should be so placed as to secure this....Several insects that are not known in the greenhouse, may visit the plants when set out, and vigilance is required....Fuchsias should never be turned out into the open ground, unless in a much sheltered place; the hot suns and winds soon destroy their beauty; if taken out of the house at all, the veranda is the best place for them, and if they can be set where the flowers can be seen from below, they will be all the more effective. Keep the weeds from growing in the flower pots.

How Agriculture is Encouraged.

—In North Carolina artificial fertilizers are taxed by means of a heavy license fee exacted from dealers, from which already $13,000 has been paid into the State treasury. In Maryland, out of 67 students in the "Agricultural College," so called, eleven are studying for West Point or the Naval School, and the professor of Mathematics is paid $3,000 per year while, the professor of Agriculture receives $600. Nearly every other industry in the country is protected, while agriculture has to take care of itself, or is burdened to help other industries.

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Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending June 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	231,000	486,000	1,916,100	113,000	89,000	814,000
27 d's *last* m'th	237,100	254,000	1,570,000	51,000	198,000	573,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	283,000	991,000	5,840,000	121,000	270,000	917,000
27 d's *last* m'th	319,000	1,072,000	7,149,000	62,000	93,000	1,570,000

2. *Comparison with same period at this time last year.*

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1877	231,000	486,000	1,916,100	113,000	89,000	814,000
24 days 1876	269,000	5,417,000	1,311,000	357,000	205,000	1,067,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1877	283,000	991,000	5,840,000	121,000	270,000	917,000
24 days 1876	329,000	4,454,000	3,101,000	381,000	15,000	1,111,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
June 11, 1877	521,303	520,643	206,815	91,846	826,054	296,129
May 7, 1877	761,686	468,809	193,046	174,375	347,881	291,654
Apr. 10, 1877	1,782,901	1,035,654	240,423	320,331	606,639	311,032
Mar. 5, 1877	2,730,641	1,711,095	288,895	513,826	822,625	335,208
Feb. 7, 1877	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Aug. 7, 1876	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876	5,802,293	663,932	100,741	325,191	1,080,300	307,438

4. *Exports from New York, Jan. 1, to June 7.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas* bush.
1877	516,494	3,676,969	7,725,024	496,565	291,497	72,800	143,944
1876	868,469	10,828,697	6,134,527	280,954	8,000	98,922	376,791
1875	784,328	9,989,147	5,515,451	97,487	165	51,990	213,582
1874	957,783	15,083,546	7,021,960	443,103	100	57,585	256,916
1873	526,562	3,241,919	5,398,449	20,823	19,526	14,646	38,200

5. *Tide-water Receipts at Albany, from opening of navigation to June 1st:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1877	100	363,800	1,282,300	106,200	76,000	211,100	68,300
1876	6,600	2,499,300	606,000	182,500	81,300	777,400	129,600

CURRENT WHOLESALE PRICES.

	May 12.	June 12.
Price of Gold	**107 1-4**	**104 7-8**
Flour—Super to Extra State	$7 50 @ 8 75	$5 50 @ 7 35
Super to Extra Southern	7 75 @12 00	5 75 @11 00
Extra Western	7 85 @13 00	6 35 @11 50
Extra Genesee	8 75 @10 25	7 50 @ 9 50
Superfine Western	7 50 @ 8 00	5 50 @ 6 25
Rye Flour	5 75 @ 6 50	4 25 @ 5 25
Corn-Meal	3 10 @ 3 95	2 65 @ 3 45
Wheat—All kinds of White	2 00 @ 2 35	1 85 @ 2 05
All kinds of Red and Amber	1 50 @ 2 25	1 15 @ 2 15
Corn—Yellow	70 @ 71	59½@ 61½
Mixed	68½@ 75	57½@ 60
White	67 @ 71	59 @ 61½
Oats—Western	46 @ 65	39 @ 62
State	64 @ 72	60 @ 67
Rye	95 @ 1 15	78 @ 1 00
Barley	60 @ 1 12½	50 @ 1 10
Barley Malt	65 @ 1 35	65 @ 1 35
Hay—Bale, ℘ 100 ℔s	65 @ 1 00	65 @ 1 00
Straw, ℘ 100 ℔s	50 @ 80	50 @ 80
Cotton—Middlings, ℘ ℔	10⅞@ 11	11⅝@ 11¾
Hops—Crop of 1876, ℘ ℔	8 @ 20	6 @ 17
" old, ℘ ℔	4 @ 10	4 @ 10
Feathers—Live Geese, ℘ ℔	40 @ 45	40 @ 45
Seed—Clover, ℘ ℔	Nominal.	— @ —
Timothy, ℘ bushel	Nominal.	1 90 @ 2 00
Flax, ℘ bushel	1 55 @ 1 70	1 70 @ 1 85
Sugar—Refi'g & Grocery ℘ ℔	9¼@ 11⅜	9 @ 11¼
Molasses, Cuba, ℘ gal. 50 test	52 @ —	48 @ 50
New Orleans, new crop, ℘ gal	45 @ 60	48 @ 62
Coffee—Rio (Gold)	17 @ 21	16½@ 20½
Tobacco, Kentucky, &c., ℘ ℔	4½@ 18	4½@ 18
Seed Leaf, ℘ ℔	4½@ 50	4½@ 50
Wool—Domestic Fleece, ℘ ℔	28 @ 50	30 @ 50
Domestic, pulled, ℘ ℔	18 @ 38	20 @ 39
California, spring clip	13 @ 30	13 @ 28
California fall clip	10 @ 21	10 @ 20
Tallow, ℘ ℔	8½@ 9	— @ 8
Oil-Cake—℘ ton	37 00 @38 00	36 00 @ —
Pork—Mess, ℘ barrel	15 50 @15 90	14 15 @14 25
Extra Prime, ℘ barrel	12 00 @12 25	11 00 @11 50
Beef—Plain mess	13 00 @13 50	12 00 @13 50
Lard, in trcs. & bbls, ℘ 100 ℔	8 75 @10 12½	7 75 @10 00
Butter—State, ℘ ℔	10 @ 26	12 @ 23
Western, poor to fancy, ℘ ℔	9½@ 25	10 @ 23
Cheese	5 @ 15	5 @ 12¼
Beans—℘ bushel	1 75 @ 3 90	2 30 @ 3 85
Peas—Canada, in bond, ℘ bu.	1 15 @ 1 20	— @ 1 00
Eggs—Fresh, ℘ dozen	11½@ 14	14 @ 16½
Poultry—Fowls & Chickens	15 @ 20	10 @ 16
Chickens, spring, ℘ pair	85 @ 1 75	— @ —
" ℘ ℔	— @ —	20 @ 25
Turkeys—℘ ℔	14 @ 20	10 @ 16
Geese, ℘ pair	1 12½@ 2 50	1 12 @ 2 50
Geese, ℘ ℔	9 @ 13	— @ —
Ducks, ℘ pair	70 @ 1 25	65 @ 1 00
" ℘ ℔	14 @ 20	— @ —
Roosters, ℘ ℔	7 @ 10	6 @ 7
Capons, ℘ ℔	22 @ 26	— @ —
Pigeons, wild, ℘ dozen	1 87½@ 2 50	1 25 @ 1 50
Squabs, per dozen	2 75 @ 3 25	Nominal.
Plover, ℘ doz	2 00 @ 2 50	Nominal.
Snipe, per doz	75 @ 2 75	Nominal.
Turnips ℘ bbl	50 @ 75	75 @ 1 00
Cabbages—℘ 100	5 00 @12 00	— @ —
" ℘ bbl	— @ —	1 50 @ 3 00
Onions—℘ bbl	4 00 @ 5 00	— @ —
" ℘ crate	— @ —	1 00 @ 1 50
Lettuce, ℘ bbl	2 00 @ 4 00	50 @ 1 00
Carrots, ℘ dozen bunches	— @ —	— @ 37½
Potatoes—℘ bbl	1 50 @ 4 00	2 00 @ 3 75
new	4 00 @ 7 50	3 00 @ 8 00
Sweet Potatoes—℘ bbl	4 00 @ 5 50	— @ —
Spinach, ℘ bbl	25 @ 1 00	50 @ 75
Tomatoes, new Bermuda, bx	75 @ 1 00	75 @ 90
Beets, ℘ 100 bunches	— @ —	2 50 @ 4 00
Radishes, ℘ 100 bunches	— @ —	50 @ 87½
Asparagus, ℘ doz. bunches	1 25 @ 3 00	1 00 @ 2 25
String Beans, ℘ crate	1 00 @ 1 75	1 00 @ 2 50
Rhubarb, ℘ 100 bunches	1 50 @ 3 60	1 25 @ 2 00
Cucumbers, ℘ crate	— @ —	1 50 @ 2 25
Broom-corn	3½@ 8	3½@ 8½
Green Peas, ℘ crate	75 @ 3 00	2 50 @ 4 00
Cranberries—℘ crate	50 @ 1 75	— @ —
Apples—℘ barrel	75 @ 3 50	1 00 @ 4 50
Strawberries, ℘ quart	15 @ 40	5 @ 15
Squash, ℘ bbl	1 50 @ 2 00	1 00 @ 1 50
Peanuts, domestic, ℘ bush.	85 @ 1 25	1 00 @ 1 30
Peaches, Georgia, ℘ crate	— @ —	5 00 @ 6 00
Gooseberries, ℘ bush	— @ —	1 50 @ 2 00

Gold has been up to 107¼, and down to 104¾, closing June 12, at 104⅞, as against 107¼ on May 12; 105⅞ on April 12; 104⅝ on March 12; 106 on Jan. 12; 107¼ on Dec. 12, 1876, and 112½ on the 12th of June, 1876.... Under much less favorable advices from the foreign markets, Breadstuffs have been seriously depressed in price, during the month under review, the supplies—though not heavy, in the more important instances—having been generally in excess of the requirements of buyers, whether for home use or for shipment, and holders quite eager to realize. Values receded materially, and were quite irregular toward the close, the inquiry revived, especially for Wheat and Corn, the latter rallying sharply, and the market wound up more firmly. The dealings in Corn have been largely speculative, the two calls at the Produce Exchange, now held daily, one at 11 A. M., and the other at 3.15 P. M., serving to stimulate business in this connection. The receipts of Corn from the Canal have been liberal as to amount, but the condition has been, as a rule, very unsatisfactory, most of the stock grading under even steamer quality. Further important purchases of Feed Barley have been made here and at Chicago, for shipment to England, at, however, low figures. . Cotton has been more active and quoted higher....Wool has been in more request, for manufacturing purposes, but at irregular prices....Tobacco, Hops, Hay, Naval Stores, and Petroleum, have been moderately dealt in, but at variable rates....Rice has been more sought after and quoted firmer....Grass Seeds have been quiet and somewhat nominal....Groceries have been in less request, and quoted cheaper....Ocean freights have shown less activity, and at the close, decidedly less firmness....Grain rates by steam to Liverpool closed on the 12th of June at 5*d.*, (having been during the month as low as 4*d.*, and as high as 7*d.*); to Glasgow at 6*d.*; to London at 6½*d.*; to Liverpool, by sail, 4*d.*; London, by sail, 5½*d.*, per bushel. Provisions by steam to Liverpool, 40*s.* @ 55*s.* per ton; Cotton by sail and steam at ¼*d.* ℘ ℔. Grain, by sail, for Cork and orders, at 5*s.* @ 5*s.* 6*d.* per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
May 21	9,721	34	4,590	19,149	21,925
May 28	9,434	70	4,277	23,700	20,754
June 4	10,451	87	5,914	20,402	18,866
June 11	9,376	69	4,583	19,322	19,901
Total for 4 *Weeks*	38,982	260	10,334	82,673	84,446
do. *for prev.* 5 *Weeks*	55,057	331	21,545	90,013	138,787

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	6,745	65	4833	20,668	20,361
do. do. *last Month*	13,761	66	4,300	18,062	27,777
do. do. *prev's Month*	10,019	66	1,577	21,225	20,711

Beeves.—The opening of the business for the past month was unfortunately affected by the heated term, and the flow of prices and high spirits of the sellers were alike checked with the setting in of a decided ebb. Prices fell off fully ½c. per lb. the first week, and in the gradual recovery may be seen the effect of the export of 7,461 head from this city to Europe. What would be the effect were it not for this outlet of the surplus beef it is easy to imagine. The market gradually recovered tone on the whole, fluctuating meanwhile, and closed very lively, with some extra cattle touching the extreme price of 13½c. Texans, which, by the by, are rapidly improving in quality and reputation, brought 11@11½c. per lb. for 56@57 lbs. per cwt., an estimate higher than was really merited; Natives of 56@58 lbs. per cwt. reached 12½c., and extra of 59 per cwt. up to 13@13½c. per lb. Estimates in fact were just what buyers could exact from dealers in a "booming" market. The gradual increase in prices promises to lessen the export business, temporarily until the "steam blows off," when this safety valve will again be shut down on to the market.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
May 21	9½@12½c.	10½@11¾c.	11 c.
May 28	10 @12½c.	11 @11½c.	11¼c.
June 4	9½@12½c.	11 @12 c.	11¼c.
June 11	9½@13½c.	11 @12½c.	11¾c.

Cows.—A light business has been done in cows; good cows being in demand, and only poor ones in supply. The closing of the swill-milk dairies has stopped the sale of poor milkers. Good cows sold for $60@$65 for extra; poor ones have been very slow of sale at $35 @$40 each.... **Calves.**—The heated term wrought mischief with the calves; poor bobs and hog-dressed being spoiled by hundreds. Live calves of good quality are salable at 7c. ℘ ℔ live weight; buttermilk calves sold for 3½c.@4½c., and thin veals at 5c.@5½c.... **Sheep.**—The shipment of sheep and mutton to Europe helps the market greatly. A shipment of 400 Ohio and Kentucky wethers, averaging in lots 132 to 161½ ℔s., sold at 7c. ℘ ℔ live weight. Other prime sheep sold through the month at from 6c.@6½c. ℘ ℔, and ordinary at 4½c.@5½c. ℘ ℔ live weight. Choice lambs brought 10c.@10½c. ℘ ℔ live weight, and poor to good 7½c.@9c. ℘ ℔.... **Swine.** The market has fallen off considerably the past month, and closes without recovery. All the "hog products" have kept company. City dressed hogs closed at 6½c.@6¾c.; live Ohio hogs of 200 ℔s. for $5.80@$5.85 ℘ 100 ℔s.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₩ ton	$56.50
do. do. Lobos, do. do. do.	47.50
do. do. guaranteed, ₩ ton, cargo C	56.00
do. do. rectified, per ton, 10 p. c.	66.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Wheat and Grass Manure, ₩ 1,000 lbs.,	27.00
do. Tobacco do. do.	24.67
do. Turnip do. do.	19.36
do. Bone, strictly pure, fine ...per ton.	40.00
do. do. do. medium do.	37.00
do. do. do. coarse do.	35.00
" Dissolved Bone, 15 per cent do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.60
" " Dry g'd Fish Guano, ton 9 p.c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton	7.00@8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (actual potash 44 per cent) per lb.	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$20.00
Muriate of Potash (actual potash 50 per cent), per lb.	2½c.
Nitrate of Soda, per lb.	4½c.@ 5 c.
Sulphate of Ammonia (25 per cent.), per lb.	4¼c.@ 4½c
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$50

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss..**Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (50 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time,at the club rates, if new members begin at same date as original club.

Personal.—One of the Editors, to whom a considerable share of the editorial correspondence falls, has been detained from the office by a somewhat protracted illness. Those correspondents who feel that their favors have been neglected or overlooked, will please accept this as an explanation and apology.

The Berkshire Record.—"A. B. C.," Mantua, Ohio. There is but one Berkshire Swine Association, and but one Berkshire Record. As the swine are entered in the Record simply from the statement of their owners, it is no guarantee of correctness, any further than whatever confidence may be placed in the word of the owners of the swine. The Record will of course prevent some possible misstatements.

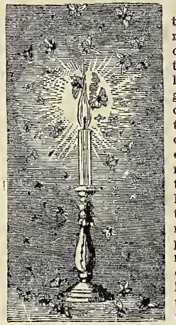
Swine Husbandry.—A Practical Manual for the Breeding, Rearing, and Management of Swine, and the Prevention and Treatment of their Diseases. By F. D. Coburn, a Western Practical Farmer and Breeder. Illustrated. New York. Orange Judd Company.—In the great corn-growing States of the West, the conversion of that product into the compact and portable form of pork, is a leading industry, and the problem, "How much pork can be made from a bushel of corn?" or "How much pork is represented by an acre of corn?" is of the greatest importance to every farmer. Our agricultural literature has heretofore been deficient in works giving an account of the wholesale process of pork-making, as practised in the great corn-producing States, and the present book, by one practically engaged in the pursuit, will be generally welcomed. The first portion of the work discusses the merits of the leading breeds, and while indicating his own preference for the Berkshire, the author gives a full presentation of the claims made for other breeds. The portion devoted to breeding is in accordance with the views of the best breeders, and the chapters devoted to feeding and fattening present the subject in a most thorough manner. A large share of the work is devoted to the "Diseases of Swine," and is probably the part which will be consulted by many with the greatest interest. But few, who have not given special attention to the subject, are aware of the immense losses the country has annually sustained for several years, through the wholesale mortality among swine in several Western States, from diseases which are alike in being rapidly fatal, and are popularly classed under the term "Hog Cholera." This subject is most thoroughly discussed, and its causes shown to be avoidable. In this part of the volume, as in other parts, the author does not content himself by giving merely his own experience and views, but draws freely from the writings of others, to whom he, of course, gives full credit. The work throughout bears the impress of a desire to exhibit the present state of knowledge on the subject, rather than to put forth himself as an authority. While written from a Western breeder's standpoint, the usefulness of the book is by no means limited to any section of the country, as sound principles are of universal application. As we shall have occasion to notice some special features of the work hereafter, it is sufficient at present to announce it as the fullest and freshest compendium of information relating to Swine Breeding yet offered, and a most important contribution to our agricultural literature. It is now in press and nearly ready. Price, post-paid, $1.75.

Study the Advertising Columns.—We often take up a daily or weekly newspaper and carefully read all the Advertisements through, and never do this without getting some useful information. One learns what business is being done, and how it is done—what is for sale, and by whom. *Our* business columns are of especial value, because of the care taken to exclude all advertisements from parties not believed to be honest. We mean to advertise for no parties who have not both the ability and intention to do all they promise. In order to please advertisers, we repeat the request that those sending orders, or for circulars, etc., to our patrons, will mention *where* the advertisements were seen. We also like to have advertisers thus get some idea of the large number of intelligent and enterprising people they find among our readers.

When to Sell Crops, Gold, and Stocks.—The query is constantly coming to the editors of the *American Agriculturist:* "Would you advise us to sell our Wheat, Corn, Wool, etc., *now*, or to wait for a rise in price. It is exceedingly difficult to advise. Take an illustration.—This office receives, during every year, considerable sums for subscriptions, in the form of gold or drafts payable in gold, as from Australia and New Zealand, the African Coast, etc., and the invariable rule is to sell such remittances immediately. [Some railroad stock received by the writer in exchange for real estate was in like manner at once sold for 35.—They are now worth only 1 or 2 per cent.] The idea acted upon is, that the publishers are not speculators in gold or stocks; that there is a large number of men constantly engaged in such speculation who give their whole attention to this subject, watching every feature and studying every prospect of the market, and that if gold or stocks were certain to go higher these men would buy up all there is to sell. *They* know better than outsiders as to the real present worth of such articles. Sometimes after a rise in price the temptation is to say: "There now, if we had only held on we could have got more;" but it just as often happens that one can say: "Was it not lucky we sold just when we did, for see what a fall there is."—Does not the above rule apply equally well to selling or holding farm products for a rise? They may go higher, and then again they may be lower. Is it worth while to speculate? Do not the sharp, shrewd dealers know best what the probabilities are? If there is a fair prospect of an advance, will not they pay higher now? We never advise farmers *when* to sell their produce. As stated above, the safe rule seems to *us* to be to sell whenever ready to go to the market, or one most needs the money, and be satisfied whichever way prices turn afterwards—as stated under our General Notes on Work for the Month.

An Excellent Chemist Available.—To any Agricultural College or Agricultural Experiment Station, or other enterprise needing the services of a first-rate Analytical Chemist, we would highly commend Herr WARNECKE, of Middletown, Conn. Mr. Warnecke received a thorough preparation for Agricultural and technical Chemistry, in Germany, and was very warmly recommended by leading men there. He studied at the Universities of Greifswald and Leipsic, and was for 2¼ years Assistant in the Laboratory of the Agricultural-physiological Institute of the University of Leipsic, where he worked with Stohmann, one of the first authorities in technical and agricultural chemistry, who recommends Mr. Warnecke highly. Mr. W. came to this country by invitation, to execute some special investigations at the Conn. Agr. Experiment Station during the year ending with this month, which he has done efficiently and to the entire satisfaction of those who called him. He has acquired considerable knowledge of our language and customs, likes the country, and will be pleased to become a permanent resident. We hope his services will be retained here; he will be a valuable acquisition to any Institution or other parties engaging him. Address G. WARNECKE, Middletown, Conn.

Sundry Humbugs.



The long-time readers of the Humbug Column, will recollect that from the close of the war, up to within three or four years ago, a large amount of space was given to the exposure of the dealers in "queer," the technical name among swindlers and police, and other officers, for counterfeit money. So thoroughly were the plans of these rascals laid bare, combined with the fact that many were arrested, that the business appears to have been no longer remunerative, and so nearly extinct, that of late years it has been only now and then that we have had occasion to refer to the matter at all. The droll thing about the whole affair is, that there was

NO COUNTERFEIT MONEY

concerned in the transaction. Circulars, usually lithographed, to induce the ignorant to think they were written, claimed that the sender was the most expert engraver in the country, that he formerly worked for the Government, that he had engraved plates from which he could print bills that the Treasury officers themselves could not detect; he wished to extend his business, and "having heard" that the one receiving the circular could be trusted, he proposed to sell his "goods" very cheap. Some made dreadful threats of what would be done if the recipient of the circular violated the confidence thus placed in him; then followed minute directions about meeting at a certain hotel, and all that. Out of thousands of circulars, some would fall into the hands of persons just unprincipled enough to catch at the chance, and quite ready to pass counterfeit money, if they could do so and not be detected, and in the aggregate quite a number of would-be buyers of "queer," made appointments at obscure hotels, according to directions, and came at the appointed day. They paid over their good money, and received a parcel in exchange; the buyer was advised to leave the city as quickly as possible, before the "cops" (police) got after him, etc. When the buyer opened his parcel, he found it counterfeit indeed! A pile of old newspapers, cut to the size of bills, or a box filled with sawdust, or stuff of equal value. Sometimes a victim was disposed to follow up the matter, but the rogue who had done him was equal to the occasion, informing him coolly that

HE DARE NOT "SQUEAL,"

as he had shown his desire to procure counterfeit money for circulation, a transaction the courts would not recognize. First and last, hundreds of green-horns who came to the city, prepared to become scoundrels, went home poorer, if not wiser men. This is the general outline of the business, the details of which were worked out with many variations. Since it appeared to be effectually squelched, there has been every now and then a short-lived revival. Some chaps are trying the game just now; they are an improvement on the earlier lot, in as much as their circular is short, straight, and to the point, there is no attempt at concealment, as they wish people to believe that they have counterfeit money, and say so. We give one of these recent circulars in full.

NEW YORK, 1877. *Dear Sir:*—One of our Agents has sent us word that you are a proper man to handle our Stuff, (Counterfeit Money), and if that is so, you had better come on at once and make a Personal examination. We have the best Stuff in the market. Our prices are as follows, $100, any kind you wish, for $10.00; $500 for $30.00; $1,000 for $50.00. If you can not come we will send the Stuff by mail or express, on receipt of price, but would rather you would come on and see it before engaging in the business. We do not answer Postal Cards. If you send money for the Stuff, send large Bills neatly folded in a plain envelope, do not send it by Express, Registered Letter, or P. O. Order, but in a plain envelope.

To those who wish to see Samples, we will send by mail postpaid, $30.00 of our Stuff on receipt of $5.00 in a plain envelope. Yours in silence, T. LEE, Room 5, 31 Park Row, New York City.

There may be persons who think that T. Lee will be found at the place designated, ready to sell his "Stuff" as if it were soap or mackerel, in open market. Mr. Lee and his tribe are quite too sharp for that. The final clause offering, as a sample, $30 worth of the "best stuff in the market," for the sum of $5, fully accounts for not only the "milk in the cocoanut," but for the cocoanut itself.

CHEAP JEWELRY.

We have numerous circulars of dealers in cheap jewelry sent us, and are asked if the articles are as represented, or if the dealers are responsible. We find that as a general thing, the articles offered are claimed to be of some particular metal or compound which "looks as well as gold," which we do not doubt, but when it is stated that it will "wear as well as gold," we look upon that assertion as a humbug. We have no sympathy whatever with the taste that leads to a display of cheap jewelry, and have no advice to give as to the quality of this or that particular kind. Probably one is as good—or as bad—as another. They set out with the claim that they are imitations and will no doubt sustain it. If one gets a finger ring for 60 cents, a set of shirt studs for 75 cents, or a "lady's set of pin and ear drops" for $1.25—the wearer may be sure the *intrinsic* value of the articles is not more than one-third of those prices. For one to decorate his or her person with that which pretends to be that which it is not, shows at least a want of consideration of the fitness of things. There is danger that a pretentious show, and want of sincerity in these trivial matters, may be taken as an index to the wearer's character. As they are not necessary to comfort, and to the eyes of judicious persons are far from ornamental, good sense as well as good taste would suggest omitting them altogether....The most unsatisfactory cases are those we feel sure are fraudulent, but have not *proof* of the fact. A striking illustration of this is the

"MONITOR LAMP MANUFACTURING CO.,"

having its head quarters at Cincinnati. Its circulars, offering agencies, were very attractive to the unemployed, and they appear to have been scattered far and wide. At one time they came to us by dozens, the senders asking advice about investing. We could get no positive information from Cincinnati, except that "the concern appeared to be doing a large business." Our chief ground of suspicion was the very elaborate manner in which their "agreements" were drawn up, with the obligations all on one side. Of course money was to be advanced for an out-fit, but the sum required was not large. At last complaints came that money was sent and no returns received; than we learned from the Cincinnati papers that the Chief of Police of that city had received "thousands" of complaints of the failure of the "Monitor Co." to reply to those who have sent them money. Whether the "Co." survived this exposure or not we have not learned....There are other ways of

HUMBUGGING FARMERS,

besides selling seeds of well known plants under new names. The chaps with the recipe to prevent the borer and other insects from injuring trees are around again in some of the Western States. They chargs $5 for the recipe, and at the risk of injuring their business, we tell what it is, for the purpose of showing the absurdity of the thing. A pint of turpentine is to be mixed with a gallon of soft soap; this is to be rubbed well upon the body of the tree: "it penetrates into the sap of the tree and destroys all the insects that subsist upon the sap or on the leaves!" But that is not all: "Five or six days after the first application, pour as close to the tree as possible, about half a gallon of boiling hot lye, in which has been dissolved a half pint of common salt and one gill of turpentine."—The venders of this recipe claim that it is patented. We have seen several of these tree-doctoring recipes, and they are all either useless or injurious, and it is safe to avoid the whole lot....Elias is a name not unknown to fame, but recently

MR. ELIAS CAME TO GRIEF.

He fitted up a place on Broadway with handsome show-cases, in which was a display of silver ware and gold ware and other wares, each and all duly ticketed. Hand-bills informed the public that for the paltry sum of $1—it could have "the choice of $1,000,000 worth of goods." This is the way the "choice" was chosen. Mr. Public walked up to a ticket office, in which was a small hole, passed in his $1, in return for which some invisible hand passed out a sealed envelope; said envelope contained a ticket, which ticket had on it a number, and entitled the holder to that particular article of the "$1,000,000 worth of goods," that bore a number corresponding to that on the ticket. Somehow the "choice" did not seem to fall much on the large articles, but the luck run mainly on things worth less than a dollar. But strangely enough the Police Captain of the Precinct looked upon Mr. Elias's enterprize as a game of chance, and he was brought before a magistrate for violation of the Lottery Law, and quite as strangely, the magistrate would not take Mr. Elias' word for it, that it was a perfectly legitimate business, but held him to bail to answer for a violation of the law. The law is gradually making itself felt among the lottery and gambling fraternity. Only a week or so ago one of the heavy lottery concerns undertook to contest the right of the Government to refuse to carry lottery circulars in the mails, but Judge Blatchford, by his decision that the law is constitutional, knocked that prop from under their shaky edifice. It takes time, but they will have to yield at last....The old style of

MOCK AUCTIONS,

has pretty much disappeared, but there is a form of mock auction against which it is well for strangers visiting New York to be on their guard. In several of the fashionable streets, occupied only by private residences, such as 16th, 23rd, and 25th streets, are houses, to all appearance, residences, but really are auction shops, in which "a family is breaking up house-keeping," or from which "the family is about leaving for Europe," every day. The house is furnished and all has the appearance to a stranger of a legitimate sale of the effects of a private establishment. There is a set of men and women who act as cappers, or stool pigeons, and though more refined, the whole thing is run in the regular Peter Funk style. The furniture is made expressly for these sales, showy externally, but really worthless for wear; thus the sofas, with gay upholstery, are stuffed with shavings and all sorts of shams are practiced. These sales are especially dangerous to those who come from abroad with the intention of purchasing furniture; they have perhaps examined and priced similar articles at the stores, and thinking that they are getting the same articles at half the regular prices, purchase freely and are cheated hugely. Not long ago a gentleman from Pennsylvania was victimized for some $1,600, and another from Charleston, S. C., was heavily taken in....Chromos have been put to a good many uses, first and last, but here is the

VERY LATEST DODGE IN CHROMOS.

A quack medicine concern—we will not give it the benefit of an advertisement, so withhold the name—sends a circular to the Postmasters, which says: "Will you oblige us by sending on this sheet, a list of 20, or more, Live, Active Men, [*Dead* active ones won't answer], such as school teachers, farmers, peddlers, and others who might take an agency, and for your kindness in our behalf, we will send you by return mail, pre-paid, our Four Handsome Chromos, etc."—Yet many good people wonder how their names become known to the senders of all sorts of circulars. This is but one of the many devices for procuring names....There is a chap careering through New England, calling himself the "Consulting Physician of

THE NEW YORK COLLEGE OF HEALTH,"

and a correspondent sends us one of the "Doctor's" show bills, asking us if there is any such institution as he professes to represent. "Such an institution?" Why isn't there a picture of it—what more would you have? To be sure there is no sign on the building, nor is there anywhere any mention made of the street or avenue on which this building is located. But what of that, such matters are trivial beside the great fact that Doctor B. is the "Consulting Physician," and has copy-righted his show-bill. Among the regularly organized colleges, having a legal title, there is none called N. Y. College of Health, but as one or two men have a way of calling themselves a "University," and one man has made an "Institute" and a whole Board of Trustees, we can't say but there may be some such one-horse concern bearing the above name. We know of no such building.... One of the curiosities of this kind of medical literature, is the circular of the "Seven Barks" man, in which

THE PLAIN LANGUAGE OF THE FRIENDS

is made to serve in a business document in a most amusing manner. It is rather droll that the whole story of "Seven Barks," its remarkable properties, wonderful cures, and all the rest of it, should be in ordinary language, while it is only in his confidential circular that the proprietor "thees and thous." Here he does it strong, in fact, we think he over-does it, and this, with a misquotation of Scripture, makes us rather suspect the writer's orthodoxy. Still, as a business appeal, it is altogether a curiosity. What can be more neatly put than this? a real "Friend" could hardly do it more shrewdly. "That I may be assured of thy honesty, let one of thy town officers or public men sign the certificate at the close of this sheet. This will show me in what esteem thou art held by thy fellow men."—He must be a hardened wretch who would take advantage of the Seven Barks man after this appeal. "Thee may be aware of the fact that the Society of Friends (commonly called Quakers) do not approve of going to law; therefore I shall not sue thee—even should thee not pay for what medicines thou mayest sell. But, if thee has any doubt in thine own mind about thine ability to do right by me, please do not accept the agency,"—and we say "Don't."

THE HISTORY OF THE DISCOVERY

of the various wonderful medicines that are offered from time to time, is in itself a curious study. It seems to be accepted that there must be something marvellous connected with either the discovery or the preparation of the stuff. The Indian dodge, though well known, is still far from being used up, and is yet to serve for wonderful cures in the future. Picking up on the sea-shore a bottle which contains the recipe, saved to the world in this manner by some thoughtful benefactor on a sinking ship, is not so popular as it was. The good old granny of the Mother Noble style, has done fair service, and now and then, as in the case of "Seven Barks," we have a good old daddy. "Seven Barks," or *Hydrangea arborescens*, from which the medicine is said to be made, is a common native shrub, and there is no chance of lugging in a "big Injun," or doing the sensational about its discovery. The medicine would never run on its "native graces," but "foreign airs" must somehow be added. In this case the "emotional" is worked up on its preparation, so the proprietor crossed the ocean; he takes us up the Moselle to Wisbaden, where he sought out Franz Ganswein—a wonderful man, indeed, for he had a way of squeezing five different sorts of stuff out of one poor shrub. Of course the American learned how to squeeze too—here was the needed foreign element, the spice of adventure, the bit of the marvellous. The story, with a portrait of old Ganswein, rather mussy as to neck-cloth, and powerful as to eye-glass, gives the needed finish, and lifts it from the level of the common place, to almost the eminent position occupied by our ever esteemed Eddie Eastman. A most amusing book could be made of the alleged histories of the various medicines—but what a sad comment on human credulity would it be!

Steam and the Steam Engine.—Now that steam engines are coming into such general use in workshops, on farms, and for irrigation in gardens and fields, it is of the greatest importance that those who use steam should have a knowledge of its character and of its proper and safe management, as well as of the principles of construction of steam-boilers and engines. This knowledge may be gained from the study of two very valuable little works, published by G. P. Putnam's Sons, New York. These are entitled "Steam and the Steam Engine," of Putnam's Elementary Series of Science and Art, price 75 cents, and a more advanced and comprehensive work, "Steam and the Steam Engine," of the Advanced Series of Science and Art, price $1.50. These two books should be well studied by every one who uses steam, or who proposes to do so. The books can be supplied post-paid by Orange Judd Co., 245 Broadway, N. Y.

Salt for Poultry.—A. McLaren, Meadville, Pa., writes: "I would like very much to have some of your correspondents give the reason why poultry should be excluded from the great essential, salt. In my early experience, this was the precept laid down by my mother, and it is practised by nearly every one to-day. I am a very extensive breeder of nearly all the fine bred varieties of fowls, and have reared this season about 500 young stock. I find that my stock thrive better, are heartier, and appear better in every way, after their warm feed of meal and bran, every morning, well seasoned with salt, and in cold weather with a little red pepper added. I look upon these two condiments as the ounce of prevention in the case of disease, and would ask your readers to try it and report. If I can afford to experiment, if you call it so, on my valuable stock, and daily see the results are so favorable, I think it would pay those who raise for market."

A Fine Farming Region at the West.—The comparative prosperity of many Western farmers, who are turning into cash their corn in the form of pork products, and their pasturage and corn in the form of beef—the latter now in good demand, and likely to be still greater—is attracting the attention of many Eastern people, and we hear of large numbers going to settle the present season, especially in Eastern Nebraska, where, from all accounts, there still remain in market some very fine agricultural lands, as well as in many other localities. We happen to know some of these parties from Eastern New York, from whom we shall get further information, and will be happy to communicate any facts that we may have, or obtain, to such readers as have serious thoughts of trying farming at the West.

Too "Un-knowing"—Too "Unsuspecting."—A Western news-paper of large circulation says, editorially, "we never insert advertisements *known* to be of immoral or swindling character"...."we refuse thousands of dollars offered for such advertisements every year, and throw out *at once* those *suspected* of being of this nature," (the italics are ours). Yet in the same number we find some 20 medical (?) advertisements of deafness positively cured; stuff producing heavy beards on smooth faces; Rev. (?) Inman's Bible House remedy for "early indiscretions," "discovered by a missionary in South America;" "Manhood Restored;" sundry cures for "early indiscretion;" sure cures for fits and epilepsy, for opium eating, etc., and others of an equally absurd or swindling character; some fifteen employment advertisements, including $350 a month guaranteed, of which at least half should be let alone severely; genuine Swiss time-keepers for 50 cts.

(a small bit of metal sun-dial of no practical use); about $50 worth of Jewelry, according to the description, for $1; good $3 watches!; eight pieces of gold jewelry worth $6 for 50 cents; "bankrupt stock" of course! two swindling Wall-street "Stock privilege" dealers, etc., etc. If the Editors or Publishers know the character of these advertisements, why did they give the quasi endorsement of them in the editorial? If they don't "know" or "*suspect*" any thing "immoral" or "swindling" in them, then they must be very "verdant youth," too *un*-"knowing," too *un*-"suspecting," to be safe guardians of their readers' interest.

How to Prevent Gapes.—"Mrs. H. W. M.," Jefferson Co., Ky. The worms found in the windpipe of young chicks, are those known as gape-worms. It is quite possible that those often found in the intestines are the same worms, but the full history of the gape-worm is not well understood. It is supposed, however, that the old fowls carry the worms, and discharge them with the eggs in the dung. The eggs are picked up by the chicks, and are hatched in the stomach, from whence they crawl up the gullet, until they reach the windpipe, where they stay. A very similar worm infests sheep and young lambs, in very much such a way as this. It is easy to prevent lambs from being affected, by keeping them from pasturing after the old sheep, and it is equally easy to prevent gapes in chickens, by keeping them upon fresh ground. Prevention in this case is easier and better than cure, especially when there is no cure that can be depended on.

Alfalfa (Lucern) in Texas.—"J. W. S.," Bandera Co., Texas. Alfalfa succeeds well in California, Northern Mexico, and in Texas along the Rio Grande, and would probably do well with you. Seed can be best procured in California, as that grown in a dry locality, succeeds better in a dry climate than other seed. It can be procured of B. F. Wellington, San Francisco.

A Subsoil Plow for Lands that wash.—"J. A K.," Knox Co., Mo. Any plow that will open up the subsoil, and leave channels for the percolation of water, would be serviceable for lands that wash. Light lands, with clay subsoils, are very subject to this inconvenience. In such cases subsoiling with a mole-plow is to be recommended. The deeper the subsoil is disturbed, the more effective is the result.

How to make a Stone Drain.—"C. S.," Lewiston, Me. In laying a drain to be made of stone, the ditch should first be dug out to a proper depth, say at least three feet, and of a width sufficient to leave a clear passage for all the water expected to flow through it. Place long narrow stones along the side at the bottom, bed the stones well, and pack clay at the back to prevent water from making a channel behind or under the stones. Then lay flat stones across these, each end resting upon the first mentioned stones, leaving a clear water channel. Afterwards pack stone carefully on the top of the flat stones, covering all holes so that the earth cannot fall into the drain. If the drain could then be filled with gravel it would be best, if not, fill in with earth. Such a drain, well laid, will last as long as a tile-drain. The bottom of the drain should not be paved.

How to throw a Horse.—"C. A. H.," Somerset, Me. To throw a horse safely, a strong strap should be passed around the body at the saddle girth. A loop is fixed beneath the belly. One fore foot is lifted and fastened to the loop. In this condition the horse cannot kick. Straps are passed around the hind fetlocks, and a rope fastened to these is passed through the loop. A strap is also passed around the remaining fore foot, and a rope is attached to this. The last rope is drawn up until the horse is on his knees, when the other rope is drawn up, and the horse is gently pushed over upon his side. The ropes are then drawn up quickly and secured, when the horse is powerless.

Superfœtation.—"W. B. E.," Hancock Co., Ill. It is quite possible that a cow may produce two calves by different bulls. Such an occurrence has taken place occasionally with cows, and mares have similarly produced two colts. It is known as *superfœtation*. Sometimes both of the young animals live, but generally one or both die before birth.

Poll-evil.—"D. C. B.," Warwick, N. Y. "Poll-evil," so-called, which is really an abscess at the junction of the head and neck. is not serious unless the joint of the neck and head is involved. This is known by the stiffness of the neck, which prevents movement of the head. In this case it is almost certain that the spinal cord will be affected, and the animal lost. Otherwise, all that is necessary is to open the abscess so deeply that the matter may escape from the bottom, and dress it with a solution of half a dram of Chloride of Zinc in a quart of water. A tape should be tied in the wound, and when healing commences, this should be retained in the bottom to keep it open until the top is healed.

Bitter Milk.—"Subscriber," Carroll Co., Md. When the milk and cream have a bitter or other wrong flavor, the cause should first be sought in the food or water. If there is nothing to be found in the food, the water should be examined with care, as this is the most frequent cause of bad milk. If the water is from a pond, or other stagnant source, and is not perfectly pure and fresh, this is probably the cause of the trouble. If not, it is possibly the effect of the clover, or the meal fed may be moldy from heating. The easiest way to correct the bitter taste of the milk, is to put a piece of saltpeter, the size of a small bean, into each pan of milk.

An Old Garget.—"W. H. D., Washington, D. C. When a cow's udder becomes permanently indurated, from the effects of an attack of garget some time previous, the structure of the gland has become changed, the milk-ducts have become thickened and closed, and there is no remedy. It is very probable that there will be trouble with the udder when the cow again has a calf.

Cement Roof.—"D. O. S.," Saginaw Co., Mich. A cement roof may very easily be made, by having an edge strip all around, so as to leave a space two inches deep all over the surface. The roof should not be more than one-eighth pitch, and may be very nearly flat. The cement should be mixed with four times its bulk of sand, while dry, water should then be added, until sufficiently plastic. The cement is to be laid on with a plasterer's trowel, and finished smoothly. When dry and hard, it may be coated with gas-tar and sprinkled with fine sand.

Compost of Fish, Plaster, and Earth.—"Z. M.," Suffolk Co., N. Y. In making a compost of fish, earth, and plaster, the plaster would have no injurious effect upon the fish, but, on the contrary, would be beneficial in fixing the ammonia which would be formed in the decomposition.

Slatted Stable Floors.—"B. F. H.," Lake Grove, N. Y. The slatted floor referred to in the *American Agriculturist* for June, page 217, is movable. When the floor beneath is to be cleaned, the slatted floor is removed and then replaced. This floor can be laid upon the ground or a bed of sand, which can be renewed whenever necessary, and thus the horse will be kept clean from litter.

Punch to Mark Chickens.—"J. A. E.," Eastman, Pa. A punch to mark chicks, so as to distinguish one brood from another, may be procured from any dealer in shoe findings, or harness maker. The usual leather punch may be used.

The American Veterinary College.—We have received the Second Annual Announcement and Report of the American Veterinary College. Some interesting and novel features are noteworthy. Among these are the free scholarships offered to each State Agricultural Society in the country. A preliminary examination, to which candidates for admission are to be submitted, and the extension of the time of study, to three full courses of lectures, instead of two. These innovations will undoubtedly tend greatly to increase the value and efficiency of the college.

Treatment of Garget.—"C, D. R.," Passaic Co., N. J. The proper treatment of garget depends much upon the character of the disease. Generally it is sufficient to give some cooling laxative medicine, and to apply cold water to the udder, leaving wet cloths upon it, supported, if necessary, by a broad band around the cow. The udder should be freed of whatever milk it may contain, and if the milk is clotted, it may be removed by injecting into the teats, with a metal syringe, a pint of water in which a teaspoonful of carbonate of soda has been dissolved, and after a few minutes milking it out. The cow's feed should be very light and cooling.

Vetches.—"W. McG.," Clearfield Co., Pa. Vetches, or tares, will grow very well in your locality. The seed can be procured of the principal seedsmen in New York, and perhaps elsewhere. The Vetch is a very good fodder crop. It is better to sow it with barley or oats; 1½ bushels of Vetches, with 2 bushels of the other.

Rearing Chickens for Market.—"J. C.," Fairfield Co., Ohio. It would be impossible to rear "broilers" for the New York market, so far away as Ohio. These young chickens are sent to market alive, and being very tender at their early age, would not survive the long journey in good condition. But New York is not the only market for poultry of this kind. The most profitable poultry raising we have heard of, was near a small village, where a large country hotel or boarding-house was located, the proprietors of which were glad to take at the highest price all the poultry raised. It is in such localities, as this, that special poultry raising is most profitable. Half-bred Light Brahmas have, so far, made the best broilers, but the Plymouth Rocks promise to compete closely with them. "Corbett's Poultry-Yard and Market," price 50 cents at this office, is a good little manual on this subject.

Ensilage of Green Fodder.—"R. M. L.," Alexandria, Va. We do not know of any person in this country, who has tried the preservation of fodder by ensilage. It is not a new practice by any means; the writer has seen fodder thus preserved on a French farm, over 20 years ago. The material in this case was beet leaves, which lie closely, and are very easily preserved. Corn fodder has been preserved by numerous French, German, and Hungarian farmers for five or six years past, and very particular accounts of it are given in the foreign agricultural journals. Several dairymen known to us, have thus preserved fresh brewers' grains every year. There is no doubt about the success of the process, if it is properly conducted. A full account of this process was given in the *American Agriculturist* for June, 1875.

Blindness in a Horse from Ophthalmia.—"M. J. S.," Caroline Co., Va. Periodic Ophthalmia, is almost certain to end in blindness. The disease may come and go for some time, but at each attack the film becomes more opaque, until finally the pus becomes absorbed, or the cornea becomes thickened and impenetrable to light. The only treatment available is to bathe the eye with a solution of 10 grains of Chloride of Zinc in a pint of water, and hang a cloth wetted with this over the eye. The horse should not be exposed to strong light while suffering from inflammation.

A Clydesdale Stud-Book.—At a meeting held Feb. 26th. at Glasgow, Scotland, measures were taken by some of the principal breeders of Clydesdale horses to establish a stud-book for the registration of pedigrees. The Earl of Dunmore took a prominent part in the proceedings, and offered a resolution, which was agreed to, for the purpose stated. A committee was appointed to carry out the object of the resolution, and agree upon details.

How to Get Rid of Chicken-Lice.—"J. C. M.," Luzerne Co., Pa. A poultry house may be cleared of lice, when badly infested, by thoroughly cleaning it, scalding the floor, if of boards, and washing it with soft soap and boiling water. Wash the rest of the house with hot lime-wash, and rub the roosts thoroughly with lard and kerosene oil in equal parts. A small quantity of the grease should also be rubbed under the wings of the fowls, and upon their heads. This plan may need repeating once, before the vermin are cleaned out entirely. A plenty of dry earth or coal ashes should be scattered in the house.

Blasting Logs.—"H. C. G.," Dardanelles, Ark. A charge of dynamite would certainly rend a cottenwood log 4 to 6 feet in diameter very easily and quickly, and at a much less cost than $4 to $7 per log. Common blasting powder might be used with good effect, by boring in the end of the log, so as to get the charge near the center, and tamping with sand. Dynamite, however, would reduce the logs to fragments, while powder would only split it into two or three pieces, which would have to be blasted again..

"Rearing and Feeding Cattle."—"D. H. H.," Poughkeepsie, N. Y., writes: "In the article, 'Lessons from Russian Agriculture,' you ask is there any better way of meeting the dilemma than by rearing and feeding cattle For the Eastern States I think there is, and that it would be better to buy steers in the fall, fatten them in the winter, and sell in the spring. Take 10 acres good land, plant 3 with Prickly Comfrey, 2 with Durra, or Guinea Grass, and 5 with Peas, pull the peas as soon as some begin to harden, and cure them the same as grass. Pulling is better than cutting, as the roots are worth more than the same weight of tops for feed, and the cattle like them. Now, with the produce of the 10 acres, I think I could feed and fatten 20 two-year-old steers in 4 or 5 months, if they were properly fed and taken care of, which would give me a quantity of manure, and I could till less land and grow more wheat and corn." [We do not see that this plan is, in reality, anything else than rearing and feeding cattle. It does not make any difference who rears and who feeds, whether one man or two. The seeming question was hardly intended as a query; the dilemma to our mind admits of no other solution. Guinea-grass would not survive your winters.—ED.]

Getting Rid of Stumps.—"T. H. D.," Oceana Co., Mich. Where improved land is worth less than $50 an acre, it will not pay to get rid of the stumps by any expensive process. It will be better to wait until they rot out. To extract them with a cheap stump puller, worked by oxen, and use them for fences, would be better upon cheap land, than blowing them out by dynamite. This can only be done where the land is valuable.

Basket Items continued on page 273.

Locusts—and Locusts.

One of the New York illustrated papers, wishing to be funny over the appearance of Locusts in New Jersey this year, publishes an engraving called "Summer Boarders," in which a N. J. farmer is met at his gate by the arrival of a whole family of visitors, which are represented as insects in costume and carpet-bag. The engraving might be funny enough, had the artist not, by a sad mistake, made the visitors the Western or Rocky Mountain Locust, which does not come East, instead of the 17-year-Locust, which is the one at present so abundant in parts of New Jersey. The name Locust, being used for the Western scourge and the Eastern visitors, has led many to suppose that the insect was in both cases the same. Not only are the two insects so unlike as to be placed in distinct sub-orders, but they are strikingly different in their habits. The Western Locust so closely resembles one of our common grass-hoppers, as to require close observation to distinguish them. An account of this insect, with engravings, was given in the *American Agriculturist* for July, 1875. It is known as the Rocky Mountain Locust, (*Caloptenus spretus*); its ravages have been confined to the country immediately East of the Rocky Mountains, and fortunately it has not reached so far east as the valley of the Mississippi. The insect which is now attracting attention in New Jersey and some other localities, is known as the 17-year Locust, *Cicada septemdecim.* The genus *Cicada* is well known to most of our readers in the common Harvest-fly, also called Dog-day Cicada and Jarbug, (*C. canicularis*), a remarkably square-headed insect, about an inch and a half long, which makes its appearance over a wide extent of country near the end of July, and by its shrill note, said to be audible for a mile, announces that the dog-days are at hand. As an account of the 17-year Cicada or Locust, as it is commonly called, will serve to answer numerous questions, and relieve some apprehensions, we give a brief outline of its habits, referring those who would know more about it to Harris' Insects, and to Riley's "First Report on the Insects of Missouri," (1869). We reproduce here some engravings, made to illustrate an article published in 1866, in which year the insects made their appearance in Western Pennsylvania. The eggs are laid by the parent insect, in grooves in the twigs of trees, as shown in figure 1; they hatch in about 6 weeks from the time they are deposited; the young larva is about $^1/_{16}$ of an inch long, white, with long feelers, and six legs, the first pair of which are remarkably large, shaped somewhat like lobster-claws, and well calculated for digging. Soon after it is hatched, the young insect drops to the ground, and at once burrows into the earth; here they live upon the roots of plants, it is supposed that they employ their beaks in sucking the juices of the roots; but little is positively known about their manner of feeding. The insect continues this underground life, subsisting upon roots, increasing in size, and occasionally casting its skin, for 17 years! When the time comes for it to end this subterranean existence, it works towards the day-light, making a cylindrical channel ⅝ of an inch in diameter, with cemented sides, which reaches to the surface. The grubs, or more properly, pupæ, remain near the surface for several days, and at a favorable time they crawl out, always in the night. In this condition they are soft, whitish, and bear but little resemblance to the perfect insect; they crawl part way up the trunks of trees, or to some other place, and firmly fasten themselves by their claws. After a while the skin bursts along the back, and the perfect Cicada gradually works its way out, leaving the shell in a perfect state, save the rent in the back, (fig. 2), where it was made fast; it is semi-transparent, and has somewhat the appearance of parchment. When the insect leaves the skin, it is at first very soft and limp, with no conspicuous wings; in a few hours a great change takes place, its body dries and hardens, its wings unfold and take their proper shape, and it appears as in figure 3; it is soon able to fly off in search of a mate, and to add its note to the orchestra already in full blast. The sound is not produced by the mouth, but by a curiously constructed drum, found only in the males; a tightly stretched membrane, made to vibrate by the muscles of the insect, produces the note. Where the insects are numerous, their combined drumming sounds like a thrashing machine in operation. The 17-year Cicada is distinguished from the common Harvest-fly, by its much narrower head and body, and especially by its red eyes, and the orange-red color of the edge and larger veins of the wings. Near the tips of the wings there is a darkish line, somewhat like the letter **W,** which, to the superstitious, has long stood for "war," though, as there are two of them, some one has suggested that "warm weather" is the more appropriate interpretation of these "signs and omens." After pairing, the females deposite their eggs. They are provided with powerful piercers, with which they make grooves in the small branches or twigs of trees, in which the eggs are deposited in two rows, in clusters containing 15 or 20 eggs each. Each female lays 400 to 500 eggs, after which she dies. The chief damage done by the insect, is in mutilating the twigs of fruit trees in depositing the eggs; though provided with a beak, it is not known that the perfect insects feed to any extent, and they are unable to eat the foliage. They are much more frequent upon forest trees than in orchards, but when they come upon fruit trees, there seems to be no remedy. The only thing to be done is to cut and destroy the twigs containing the eggs, to prevent the larvæ from entering the ground in that locality. The insects do not appear the same year all over the country, there being a great number of different broods, each appearing at intervals of 17 years, and there is scarcely a year but what they are present in some part of the country. Mr. Riley, in the report above referred to, gives the statistics of 22 different broods, some of which, mostly confined to the Southern States, complete their career in a shorter time, and appear every 13 years. The present brood is found on both sides of the Hudson River, in a part of Connecticut, in Northern New Jersey, and in parts of Pennsylvania, Indiana, Michigan, North Carolina, Virginia, and Maryland. Its appearance at intervals of 17 years has been recorded ever since 1724. Next year a brood is due in Central Illinois, Southern Iowa, and Northern Missouri.

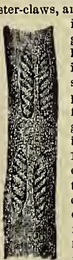


Fig. 1.

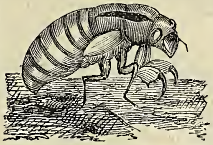


Fig. 2.—THE EMPTY PUPA CASE.

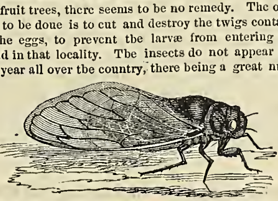


Fig. 3.—THE 17-YEAR LOCUST, OR CICADA.

Do they Sting ?—Since the above was in type, a friend asks us if the 17-year Locusts sting, as the statement that they do is frequently made in the papers. The insects have no proper sting, like the wasp or bee. The female has an ovipositor, and a beak for sucking, while the male has the beak only. Attempts to make the female puncture the flesh with her ovipositor have failed, and it appears that whatever wounds have been made by the insect—and the accounts of these are greatly exaggerated—are from the beak. The authenticated cases show that this has sometimes, though very rarely, punctured the flesh, but produced no more serious results than the prick of a pin, as the beak has no poison gland. It is probable that these cases are very rare.

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Bee Notes for July.

BY L. C. ROOT, MOHAWK, N. Y.

Indications at the present writing, are, that surplus honey may be stored earlier than usual. In most sections, in this latitude, however, the general crop may be expected during July. In Central New York, Basswood (or Linden) begins to blossom from the 12th to the 20th of July, and at that time we expect our heaviest yield.

If the honey is to be taken from the combs with the extractor, the old honey should be taken out clean from each hive, before the yield from Basswood begins, in order that the pure white honey from that may be kept by itself. This is one of the advantages of extracting surplus honey. If bee-keepers will study the different honey-yielding plants, and watch the time of their blossoming, they may take each kind by itself.

If boxes are used, and one quality of honey fails before they are entirely filled, the bees must be allowed to store two qualities in the same box, or they must be taken off when only partly filled.

Hives that are to be boxed, should have boxes in place promptly. As fast as boxes are filled, they should be removed, as by so doing the combs will be much whiter than if left upon the hives longer, and the bees allowed to pass over them. When the first boxes are removed, empty ones may take their places, but care should be taken not to put empty ones on the hives too late in the season. It is quite common for inexperient bee-keepers to have too many partly filled and soiled boxes. When boxes are taken off, place them near the entrance of the hive, and blow a little smoke into them; then, by slightly rapping them, the bees will pass out and go into the hive. For applying the smoke for this purpose, nothing can work more satisfactorily than the Quinby Smoker, shown in the engraving. It will be seen by its construction, that the smoke can be very easily forced into the boxes. It is desirable, especially late in the season, to remove the bees from the boxes as speedily as possible, and put the boxes where the bees cannot have access to them, to prevent robbing.

Hives should be well ventilated. If the boxes are placed upon the hives at the proper time, giving the bees sufficient room to store their honey, and the hive is so ventilated as to avoid their becoming over-heated, swarming may often be prevented.

If, after bees have a good start in boxes, they insist upon swarming, the swarm may be hived in a new hive, and after removing the old hive to a new stand, the new swarm may be placed upon the old stand. Two or three days later, remove the boxes, that are partly filled, from the old hive, and put them upon the new one. In this way all the working force will be with the new swarm, as nearly all the old bees will return to the old stand, and after-swarming will, in nearly every case, be prevented.

It was my intention to have said in Notes for June, that one of the best swarms of bees I have, is the one wintered on its summer stand, and the amount of honey it consumed was given each month during the winter. The swarm had no protection except a quilt placed over the frames. I shall give my views on these experiments before it is time to prepare bees for the coming winter.

[Mr. Root is particularly desirous to so shape his Notes as to meet the monthly wants of our readers. Bee-keepers seeking information, will please forward their questions directly to him. In sending them to us, there may be a sufficient delay thus caused, to prevent the answer from appearing the following month.—Ed.]

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A Potato Digger and Cultivator.

We give herewith illustrations of two implements that may be found very useful, and in fact where potatoes are grown in large quantities, indispensable. The labor of harvesting potatoes by hand is a very slow and costly process, and some machine, by which the work may be done both quickly and well, is greatly to be desired. The implement shown at figure 1, is Rue's Improved Potato Digger, and although we have not actually tried it in the field, its appearance recommends it as promising to be effective. It is provided with a coulter for opening the ground, to which is attached a revolving fender which prevents the vines from clogging it. The digger follows the coulter and lifts the potatoes, the screen behind separates the potatoes from the earth and leaves them upon the surface. With a fair crop, fifteen pickers are required for each digger. A curved knife attached to the digger enables it to raise sweet potatoes; the vines being cut on one side by the knife prevents them from choking the digger. This implement is made by G. W. Rue, Hamilton, Ohio.

A hand cultivator, which will be very useful for root crops in the field, or for corn, beans, potatoes, or other crops, which are planted in rows too narrow for the use of a horse cultivator, is shown at figure 2. This is also made by Mr. Rue. In making a trial of this implement in beans, sweet corn, and potatoes, we find that a man can go through a quarter of an acre in an hour with great ease, and do very clean, good work, the rows being 24 inches apart. In small corn, carrots, and other crops, that are tender and easily injured by rough work, a spiked roller attached to the cultivator works close up to the plants, without throwing earth upon them, and cleans and loosens the ground very thoroughly. In using the hand cultivator, the handles are grasped and the implement is then thrust forward for two or three steps, it is then suddenly drawn backwards, and again thrust forward with a sort of jerking or punching motion; this method of working is very easy compared with a steady pushing motion, which makes the machine work somewhat harder, but in our hands not too hard at all. This little machine will be found very useful in field work, where a larger cultivator may not be needed, or indeed to use in place of a larger one.

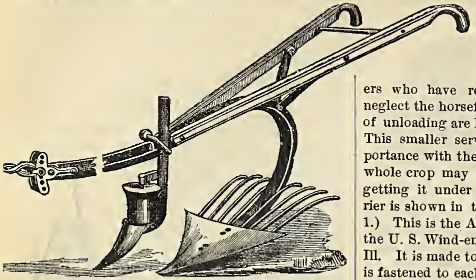
Fig. 1.—RUE'S POTATO-DIGGER.

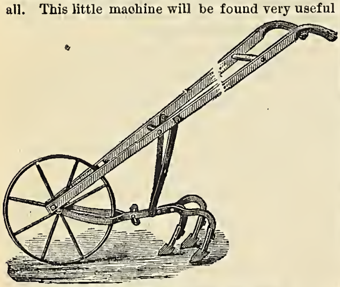
Fig. 2.—RUE'S HAND CULTIVATOR.

Hay Harvesting Machinery.

The labor of harvesting grain and hay has been more facilitated by machinery than any other farm work. But few young farmers can remember the slow and tiresome sickle, or the laborious cradle, with which grain was formerly reaped, or the scythe and rake with which hay was slowly gathered. The splendid harvesting machinery now in use in the field, is a lasting honor to American inventors and mechanics, who have originated and constructed so great a variety of it, and a remarkable help to the farmers whose labors are so greatly eased by it. But while the labor in the field has been simplified, the means for securing hay in the barn have been to a great extent neglected. The majority of farmers who have reapers, mowers, and rakes, still neglect the horsefork by which the time and labor of unloading are lessened more than three-fourths. This smaller service of unloading is of equal importance with the greater one of harvesting, for a whole crop may be endangered through delay in getting it under cover. A very excellent hay carrier is shown in the accompanying engraving, (fig. 1.) This is the Anti-friction Hay Carrier, made by the U. S. Wind-engine and Pump Co., of Batavia, Ill. It is made to run upon a wooden track which is fastened to each pair of rafters, as seen in figure 2. The carrier is shown in the illustration just as it appears when the load has been drawn up to it, and the catch by which it is held in its proper position over the load is released. The draft upon the rope now carries the load on the fork to the place where it is required to be tripped. The carrier and fork can be used to stack hay in the field as well as to put it away in the mow. A hay or straw fork, the Noyes Grapple Fork, which we regret we have not space to illustrate, and which may be used to raise hay, straw, chaff, clover seed, manure, or any other small stuff is also made by the same manufacturers, and is a very effective and desirable implement to use with this carrier.

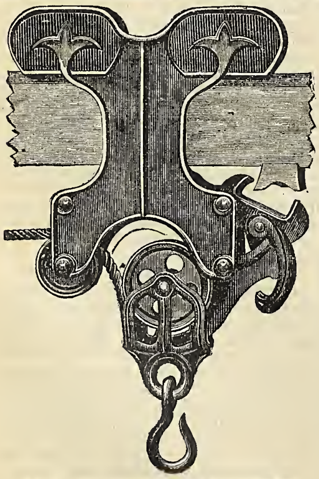
Fig. 1.—THE ANTI-FRICTION HAY-CARRIER.

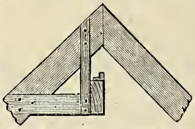
Fig. 2.—SECTION OF TRACK.

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Science Applied to Farming.—XXXI.

Investigations of Seeds.

Of the many new ways in which science has of late come to be applied to agriculture, one of the most interesting as well as most useful is in the investigation of seeds. In 1869, Dr. Nobbe, director of the Agricultural Station at Tharand, in Saxony, commenced the study of seeds in common use in Germany, and founded the first "Seed-control Station." During the seven years following over 4,000 samples of seeds have been examined at Tharand; adulterations have been discovered, most ingenious in character, harmful in effect, and remarkable in amount, working a by no means inconsiderable injury to the agriculture of the country; and more than twenty Seed-control Stations have been established in Germany, while others have been either founded or projected in Denmark, Austria, Hungary, Holland, Belgium, and Italy.

One of the outgrowths of Prof. Nobbe's work at Tharand, is his lately completed *Handbuch der Samenkunde*, a volume of 642 pages, of which 390 pages are devoted to the physiology of seeds, 140 pages to the methods of determining their agricultural value, and the rest to the means of preventing frauds, purifying seeds, and other cognate topics. This work shows that a really new science, most interesting in itself and useful in its application, is being developed by Dr. Nobbe's researches. Aside from the valuable contributions thus made to our knowledge of the constitution and characters of seeds, and the nature and conditions of the germinative process, Dr. Nobbe has shown how different seeds may be readily distinguished from each other, how adulterations may be detected, and their extent estimated, and has devised a simple and ingenious apparatus by the use of which it is easy to determine what percentage of a given sample of seed is alive, and capable of sprouting and producing vigorous plants.

The urgent need of such work as this is shown by the revelations made of the condition of the seed market in Europe, some striking pictures of which are given by Nobbe and others in the European agricultural journals.

In a late number of the *Landwirthschaftlichen Jahrbücher*, Dr. Nobbe gives a report of examinations of a large number of samples of grass seeds, from which it appears that a great deal of that sold in Germany is not only extremely impure, but also miserably poor in germinating power. This is accounted for by the fact that much of this seed is not raised for sowing, but gathered along the highways, on the borders of the fields, and especially in the woods, by women and children who work very cheaply, and that the English, Austrian, and German markets are largely supplied with grass seed from these sources. A large number of analyses of samples of such articles, as they were offered in European markets, gave an average of 41 per cent of foreign matters, including a great many foreign seeds, among which were those of worthless grasses, poisonous plants, and parasites. Of the 59 per cent of seed which corresponded to the labels under which the articles were sold, only 18.3 per cent were capable of germination. A sample of Orchard grass, *Dactylis glomerata*, contained 39 other species of seeds. In a sample sold for Meadow foxtail, *Alopecurus pratensis*, only one-half the seeds were of this species, and of the genuine seeds only 5 per cent were alive and capable of germinating, so that 100 lbs. of the seed as sold, furnished 50 lbs. of inferior, worthless, or injurious foreign seeds, and only 2½ lbs. of seeds capable of producing plants of the species for which they were sold. All the samples referred to came from dealers who ranked among the most reliable in Germany.

In 1868, over three tons of so-called red clover seed were sold to farmers in the Saxon city of Chemnitz alone, of which two-thirds was yellow clover, and this practice prevailed generally in England and on the Continent. In 1874, after the subject of bad seeds had been extensively agitated for some years, a society was formed in Saxony for the purchase of seeds, and dealers were invited to furnish samples with prices. The samples were tested at the Station at Tharand. Of 51 specimens of red clover seed, 31 were found to contain seeds of the dodder, *Cuscuta trifolii*, the destructive enemy of the clover plant. The numbers of the dodder seeds in the samples varied from about 12 to 5,000 in each pound of clover seed.

A few years ago there were a number of establishments in London, whose sole business consisted in "doctoring" inferior and foreign seeds, for mixing with pure seeds. This was done by boiling, roasting, macerating, coloring, or otherwise treating seeds of weeds, or old seeds of the species to be sold, in such ways as to prevent their detection when used for adulteration. In 1869 it was estimated that 20,000 bushels of inferior turnip seed were thus prepared for mixing with the seeds of the varieties of turnips most used by English farmers.

One of the most original, if not the most diabolical of the methods invented for adulterating seeds consists in grinding quartz-rock, sifting out particles of the proper sizes, and coloring them to imitate clover seed. This sort of manufacture was carried on for some time at or near Prague, in Bohemia, and a lively business in the sale of the products seems to have been done in Hamburg. A letter from a party there to an English firm was discovered, offering a lot of over 16 tons, at specified prices for "colored" and "not colored,"—about $2.50 per cwt. for the former, and $3.50 per cwt. for the latter—and stating that the writer was "doing a large business" in that line with English seedsmen. We have some specimens of this artificial clover seed at our laboratory. So far as external appearance goes, they are very good imitations of the genuine seeds. We have two specimens of red clover seed, one pure, the other containing 25 per cent of these quartz grains. With the unaided eye it is difficult to distinguish between them. A good many persons have examined them closely, and it is very rare that any one has detected the sand by the eye alone.

But impurities and adulterations are not the only defects of the seeds that farmers buy. The pure seeds are very apt to have lost their germinating power, or to be, practically, dead. Here the variations in quality are as wide as in the botanical characters. In the work above referred to, Dr.

Nobbe gives a summary of the results of tests of the sprouting power of some 3,700 samples of seeds sold in the European markets. These included 383 varieties of seeds of field and meadow plants, garden vegetables, flowers, shrubs, and trees. In a good many cases nearly all of the seeds proved capable of sprouting, in not a few none of them sprouted. The germinating power is estimated by percentages. Where, on the average, 50 seeds out of every 100 prove capable of germinating, this percentage is 50; where all sprout it is 100; where all are dead it is 0. Of 79 samples of Timothy seed, (*Phleum pratense*), the best yielded 99 per cent of sound seeds, the poorest 15 per cent, while the average was 82 per cent. Of 19 specimens of Orchard grass, (*Dactylis glomerata*), the best contained 61, the poorest 0, and the average 22 per cent of live seeds. In 365 specimens of Red clover, (*Trifolium pratense*), the percentages of live seeds varied from 7 to 99, the average being 82. Wheat ran from 79 to 100, averaging 95, onions from 0 to 90, averaging 50, and so on.

In a reference to this subject in the annual report of our Experiment Station, for 1876, occurs the following:

> "The utility of such work is quite evident. By means of the fertilizer control system now in operation, every farmer in the State can assure himself of the genuineness and value of the fertilizers he employs. To secure the best returns for the capital he invests, it is of equal importance to him that the seed sown should be pure, and capable of germination. Otherwise a part of the plant-food supplied to his crop will be wasted, or go to the support of useless or noxious weeds unwittingly sown with the seed which was bought as pure."

So far as I am aware, nothing like an extended examination of the seed market in this country has ever been made. Work of this kind has been commenced in our laboratory, by Messrs. Jenkins and Warnecke, who have studied the methods with Dr. Nobbe, at Tharand. Between fifty and sixty samples of the more common kinds of seeds have been examined thus far. I am very glad to be able to state that, so far as we can judge from these specimens, which have come from various parts of the country, the seeds sold in our markets must be far better than is the case in Europe. We have found but one extremely bad specimen among the number that have been examined. Most of them have turned out to be of excellent quality.

W. O. ATWATER,
Wesleyan University, Middletown, Conn.

Ogden Farm Papers.—No. 89.

BY GEORGE E. WARING, JR.

A writer in the "Atlantic Monthly" for June, makes a very good suggestion in connection with the Farm Village question. It is that when a wealthy citizen, retiring from trade, feels the agricultural emotion growing hot in his breast, he should not go into the country, buy "all the land that joins him," and spend his substance (with a delusion that he is making money) in getting out rocks, and building fortification stone walls, and a wooden chateau—with a trotting stable and bowling alley—and generally spreading himself, with the idea that he is "founding a family," and "encouraging agriculture." The only prominent influence that this sort of man has exerted over agriculture, has been to discourage it. With more similar cases in mind than I have fingers and toes, I do not hesitate to venture the opinion, that in no single instance in this whole country, has anything but failure resulted from this sort of expenditure. Some of the finest farms at the East, really fine farms too, well supplied with luxurious houses, graperies, gardener's cottages, gravel walks, and a long list of improvements, could be bought to-day for less than the cost of the stone walls with which they are fenced. I know of half a dozen instances where this process is going on now, and where the rosiest hopes, and the most glowing enthusiasm, are convincing the proprietors, at least, that they have found the philosopher's stone, and that where so many of their predecessors have ignominiously failed, they, with the aid of some undefined charm, are sure of success. These are, all of them, instances where any experienced farmer must see at once, that nothing but failure is possible as a final result. Every one of these men is sure to impoverish his estate, at its final settlement, by a very large proportion of his agricultural expenditure. One of the worst things about it is, that these cases afford the most brilliant examples for description in farmers' newspapers, whose editors are glad to have picturesque novelties to set before their readers. The consequence is, that a knowledge of these expenditures gets spread beyond its neighborhood. Farmers who live in daily observation of the "improvement," see its processes, understand its cost, and foresee the final result. It is the public beyond this limit which, getting only the published report, may be more or less misled, and fail to appreciate the utter wastefulness of the outlay. The result of this sort of thing is, I believe, always the same. Families are not founded in this country in any such way. In spite of the popular notion, money that is put into the land in this way, *does* run away with wonderful rapidity, often as fast as the sheriff can carry it. The only class of men who retire to the country in these later days, and spend their fortunes in encouraging agriculture, by improving their land at a cost ten (10) times greater than its average production for the next 20 years will pay interest upon, are those who have not the faculty of gaining knowledge by observation. The more costly school must, I suppose, always be kept open, but happily its agricultural pupils are growing fewer. The writer above referred to, says:

"Then there is another set of rich men, fewer in number, who, led by some vain and half romantic impulse—they would despise if it came up in business affairs—try to form great estates further away from the cities. They surround their mansions with a park-like solitude, and spend uneasy hours trying to enjoy their dignity where

"'Solitude hems round one burning spot of life,'

"and for such natures the trees offer only a barren sort of homage; these men need other men for admirers."

He then proposes that these city people should join interests with the farmers. That without bothering themselves with villas, they should interest themselves with villages, selling or leasing to those who will make useful neighbors, and encouraging and aiding the community in every practicable way. They would then help to break up the old lonely habit of farm life. They, and the others who might center about them from the town, would find the association with their country neighbors attractive, and their country neighbors would gain still more by the accession of a few people from the business centers. There is much more practical good sense in this suggestion than may be apparent at first.

The question of the Agricultural Department of the Government, naturally comes up with the inauguration of each new administration, and gets much valuable ventilation from the efforts made by aspirants for office, to secure the salary attaching to its management. It seems to be accepted as a self-evident proposition, that the great agricultural interest of the country demands recognition and encouragement at Washington. I was myself for many years a firm believer in the idea that the most important monied interest of the country should claim, as a matter of right, to be represented in the cabinet, the dignity of American agriculture seemed to require this. I have long since been of the opinion that the dignity of American agriculture stands in no need of such a decoration. What it most needs is, to be let alone, to be left to the legitimate action of the laws of supply and demand. As a taxpayer, it especially calls for a saving on the part of the Government, of the present foolish expenditure made to keep up this useless Department.

The very important dairy interests of the country would certainly be greatly aided by an elucidation of the causes of abortion in cows. These causes it is surely within the power of science to discover, and the necessary investigation would cost much time and money. The wide spread importance of the subject, makes it proper that the General Government, and not a single State, should undertake the investigation. It is said that Pasteur's scientific discoveries, concerning the microscopic beings or animalculæ affecting the growth of the grape, and the ripening of wine, have saved to France more than the amount of the German Indemnity. An equally profitable field is open to science in this country. The grasshopper question alone is of vast consequences, but no one supposes that the Agricultural Department as now managed, is at all able to cope with such serious work.

It has always been, even when managed at its best, a waster of money. Even its monthly publication of crop statistics has been suspended. These were of a certain value, but aside from this, it has devoted itself chiefly to giving away seeds, books—many of us have our shelves loaded with public reports, which we never read, and have thrust upon us seeds which we never use. This distribution of seeds and intelligence, may very properly be left to those whose commercial business it is, and it may be accepted as a universal truth, that both seeds and books, when bought and paid for, will be on the whole much better used, than those which are got for nothing. Of course, a certain amount of good is done by the circulation of Department Reports, and by the broadcast shedding of seeds of new and useful plants, but the amount that all this costs, as compared with the result, is simply stupendous. During the past 14 years the Agricultural Department has cost the country about *five million dollars*, besides large incidental outlays, including transportation through the mails of about three million copies of "Reports." The salaries and contingent expenses alone have amounted to over a million dollars; the seed distribution to over six hundred thousand dollars; and the experimental garden over one hundred and fifty thousand dollars. Directly or indirectly, this burden is borne very largely by our own class, and I think that any added *dignity* that has come to us from the fine building and beautiful grounds at Washington has been paid for in full.

I am not disposed to agree with those who clamor for the total abolition of the Department, nor is it perhaps advisable to make any sudden change in connection with its systems, but the present Commissioner, after a trial of eight years, has, I think, failed to convince those who have watched his course, that he is in any important respect fit for his position. A conscientious, scientific man, with the necessary capacity for administration, would in that time have convinced the people that they had no use for the stupid, heavy annual report that has been issued to them, and that so far as their money can be expended by the Government for their benefit, it must be used in ways which are not at all "showy," not even demonstrative. As suggested before, there are certain things which agriculture gravely needs, and which can be secured only by the judicious expenditure of a great deal of money and the labor and devotion of conscientious and capable men. With a proper Commissioner at the head of the Department, authorized to abolish the "Report," the experimental garden, and every form of expenditure which is intended only to make the Department "popular," there might have been obtained an amount of knowledge,—of a character which could be obtained in no other way, —which would have justified ten times the expenditure that has been made. The distribution of seeds has done but trifling good, if it has done any good whatever, and the publication of the "Report" has been a gigantic mistake.

Every item of information, which might have come into the possession of the Department, that was worth publishing at all, would have been greedily published by every agricultural and miscellaneous newspaper in America without charge. Whatever they would not publish, was presumably not worth publishing.

If the farmers are to have any say at all as to the manner in which money is to be spent for their benefit, they should insist that the present "grandmother system" shall be cut short off; that the Department shall be used for doing only such things as cannot be as well or better done in some other way, and that the results of its investigations shall be given to the world through its usual channels of information—which are quite sufficient for the purpose, costing the Government no more than the expense of sending intelligent occasional circulars to the different newspapers of the country. We have tried Commissioner Watts long enough. Let us now try some one else who has an intelligent conception of what it means to be at the head of the Department of Agriculture in an agricultural country like this.

In reply to a correspondent from Washington Territory, I would say that the deep cans used in setting milk for cream are usually made 8 inches in diameter and about 30 inches deep. The best are those made under the patent of the Iron-clad Can Co., (of Greenpoint, N. Y.), the bottom of which is made of heavy galvanized iron. The extra weight at this point serves to ballast them, causing them to float in an upright position. It is rather heavy arms-length work for a woman to lift these cans out of the water. To overcome this, I have a wooden bar, running lengthwise over my tank from which there hangs a small pully, carrying a cord with a hook at one end for use in raising the can. The pulley is attached to the bar by a loop which may be slipped back and forth to bring it to a desired position.

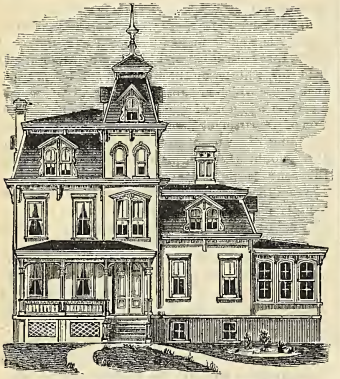


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

A letter from Benton, Ill., asks how to treat a Jersey calf six weeks old which has the "scours;" how much milk to feed it; how to feed cows when on good pasture to make them give a good amount of milk; and how much milk my best Jersey cow gives. I should feed the calf only on fresh milk newly drawn—either from its own dam or from a cow which calved at about the same time. When once cured of his trouble, I should feed him on skimmed milk very gradually, increasing the proportion of new milk at the least indication of looseness of the bowels. I should get him to eat hay as soon as possible. Being once in condition, I should give him all the skimmed milk he would drink, and what hay or good grass he would eat, and should not allow him to run loose in the pasture until he was 3 or 4 months old. Cows on good pasture should have no additional food at all, if regard is had to their permanent value. I believe that all increase of milk that comes from feeding while cows have plenty of grass, is obtained at the cost of future usefulness. My best Jersey cow gives 13 quarts of milk per day when at her best; she hardly falls below half this quantity up to 2 months before calving time, and we have difficulty in drying her off finally. I have others which give 18, 20, and 22 quarts at their best, and which also hold out very well, but the smaller milker—being very rich in quality—will make more butter in the year than either of them, and it is *butter* and not *milk* that we ask of the Jersey. If quantity of milk is the object, a good Dutch cow and a good pump will beat the Jersey out of sight.

A House Costing $4,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a suburban residence, to take the place of one recently destroyed by fire. The original structure was cubiform in outline, resembling a huge box; with unbroken facades, and flat roof, destitute of beauty, and in strange contrast with the tasteful surroundings. The owner desired to use the old foundations, still in fair condition, without disturbing the grounds, underlying pipes, etc., and thus retain the nearly square ground plan, but a building with an exterior agreeing with the surroundings. While the main object in presenting this design, is to show that the ground plans do not necessarily determine the style of exterior dress, its general arrangement and character will be found to deserve favorable consideration.... **Elevation,** (fig. 1.)—There is a constant demand for "Mansard Roofs," arising from an aspiration for structures signifying originality and progressiveness. The animated features of this style accord with activity, rather than of retirement, and adapt it to prominent situations, skirting the more public thoroughfares. The objections to such roofs result from their frequent misapplication. They are manifestly inappropriate for retired or secluded situations, or for persons of purely domestic tastes. They also lose their identity and expressiveness when duplicated in close and continuous proximity, as is often done in towns. But this is true of any other style. Variety is the spice of architecture.... **Cellar,** (fig. 2.)—Hight of 8 feet in clear. It has an outside rear entrance, is well lighted, and contains ample space for the furnace, and divisions for coal, vegetables, etc.... **First Story,** (fig. 3.)—Hight of ceilings 10 feet. The accommodations are conveniently arranged, and sufficient for a large family. The main entrance from the piazza is through large double doors and a vestibule. The hall is central and spacious, communicating with the principal rooms, and rear entry, and contains the main stairs, which are unusually wide and easy. The parlor and library, divided by large sliding doors, can be used separately or together as one spacious room when desired. The dining-room and kitchen adjoin, and have the necessary pantries, range, pump, sink, and stationary wash-tubs, with cold and hot water. A Conservatory is entered from the dining-room through double sash doors, adding a cheerful feature to this apartment, where the family spend much of their time. The rear may be reached from the dining-room in three ways—by the main hall and rear entry, or through the kitchen, or most pleasantly through the conservatory.... **Second Story,** (fig. 4.)—Hight of ceilings 9 feet. The divisions include a hall, four large chambers with closets to each, a front hall bed-room, and a bath-room. Each of the chambers has windows in two sides, giving opportunity for plentiful light and fresh air. The clear width of the room sections, (5 yards each), favors the economical cutting of carpets. The main stairs are made continuous to the attic story. The bath-room is furnished with a bath-tub, wash-bowl, and seat-closet, and with cold and hot water.... **Construction.**—The foundations, stone sills, area stoops, framing, inclosing, flooring, plastering, and painting, are similar to those described on page 212 of *American Agriculturist* for June, 1877. Care should be taken in covering the roofs, as the materials used (wood, tin, and slate), are entirely foreign to each other, and can only be placed in *contact*, and indirectly united. The wood should be thoroughly seasoned to prevent a future disturbance of the exterior covering. All flashings along the sides of the dormers and other uprights, should be 10 inches wide, and double painted before being used. The conservatory is not floored, but is filled in with earth level with the foundation walls. A walk is laid through the center, of 1½ x 4-inch slats, and the remaining space is devoted to plants. A furnace is placed in the cellar, with pipes to convey warm air to the principal rooms and halls of both stories, and to the conservatory. The pipes and register boxes, for conveying warm air to the second story, are placed in the chimneys while building them. There are open fire-places in the principal rooms, with marble mantles in the first story, and marble shelves in the chambers. Stucco cornices and centers, of appropriate patterns, are put it the principal rooms and hall of the first story. A hall and stairway leading to the tower, is completed in the **Attic,** the other portions of the 3rd story are unfinished, but may be converted into pleasant rooms for school purposes, or chambers, as desired.

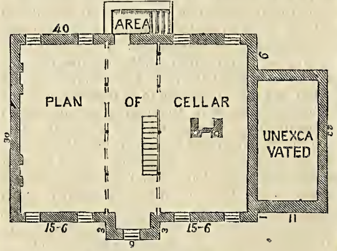


Fig. 2.—PLAN OF CELLAR.

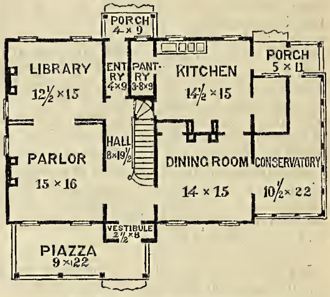


Fig. 3.—PLAN OF FIRST FLOOR.

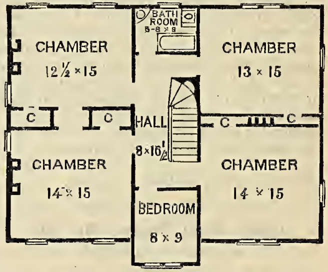
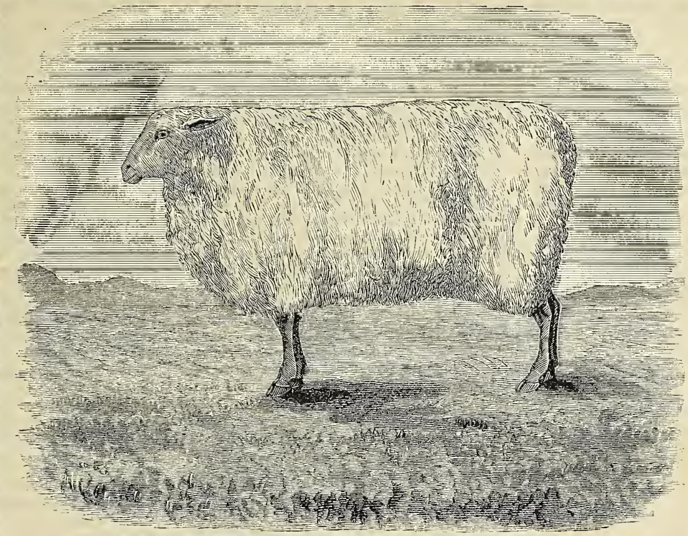


Fig. 4.—PLAN OF SECOND FLOOR.

Estimate, cost of materials and labor:

114 yards excavation at 20 cents per yard	$22.80
84 perches stone-foundation, at $2.75 per perch	231.00
60 ft. blue-stone sills, steps and coping, at 28c. per ft.	16.80
8000 bricks, furnished and laid, at $12 per M.	96.00
1000 yards plastering, at 30 cents per yard	300.00
230 feet stucco cornices and centers, at 25c. per foot	57.50
8305 feet of timber, at $16 per M.	132.88
2 girders, 4x8 in. 30 feet long.	
2 sills, 4x8 in. 30 feet long.	
2 sills, 4x8 in. 40 feet long.	
2 sills, 4x8 in. 23 feet long.	
2 sills, 4x8 in. 11 feet long.	
9 posts, 4x7 in. 23 feet long.	
2 posts, 4x7 in. 32 feet long.	
2 posts, 4x7 in. 12 feet long.	
2 posts, 4x6 in. 11 feet long.	
Ties, 4x6 in. 350 feet long.	
Plates, 4x6 in. 247 feet long.	
Perlines, 3x8 in. 215 feet long.	
51 beams, 3x8 in. 25 feet long.	
15 beams, 3x8 in. 21 feet long.	
50 beams, 3x8 in. 16 feet long.	
4 hips, 3x7 in. 14 feet long.	
Piazza, 3x7 in. 176 feet long.	
Piazza, 3x5 in. 86 feet long.	
6 locust posts at 30c., $1.80; 150 joists, at 16c., $24	25.80
150 wall strips, at 13 cents each	19.50
220 sheathing, at 18c., $39.60; 500 lbs. tarred felting, $20	59.60
400 clapboards, at 12 cents each	48.00
370 hemlock boards for roof, at 16 cents each	59.20
14 squares slate at $8½ per square	119.00
20 squares tin at $7½ per square	150.00
Cornice materials	89.62
335 pieces flooring, (9 inch) at 18 cents each	60.30
Piazzas and porches, complete	160.00
9 cellar windows, complete, at $5 each	45.00
24 plain windows, complete, at $12 each	288.00
18 dormer windows, complete, at $16 each	288.00
Stairs, complete, $100; 45 doors, com'e, at $10, $450	550.00
Closets, $30; nails, $20	50.00
3 marble mantles, $75; 4 marble shelves, $25	100.00
Range and plumbing	260.00
Sky-light in conservatory	12.00
Furnace and pipes	150.00
Carting, average 1 mile	40.00
Carpenter's labor, not included above	800.00
Painting, $220; Incidentals, $49	269.00
Total Cost, complete	$4,000.00

The Improved Kentucky Sheep.



IMPROVED KENTUCKY SHEEP, BRED AND OWNED BY ROBERT SCOTT, FRANKFORT, KY.

It is a matter of experience with sheep-breeders and farmers, that the most profitable sheep are those of cross-bred races. By judicious, or what is greatly more probable, fortuitous or lucky crossing, the most profitable European sheep have been produced. The Oxford-downs, the Hampshire-downs, the Leicesters, and even the supposed purely bred Cotswolds and Southdowns of England, as they exist at the present time, have all been more or less crossed with one or another of these breeds. The first three named are truly cross-breds, having been produced from the union of different races. The last two have been "refined" by mixtures of other blood, and have doubtless been wonderfully improved thereby. In France the Leicester-Merino is a very successful cross-bred sheep. In Germany, the Cotswold-Merino, and the Southdown-Merino are also successful instances of the crossing of breeds. In Australia, the crossing of established breeds is a matter of promising experiment, and there is a probability, that ere long a breed may be produced, that will be more permanently suited to the peculiar necessities of the country and climate, than any old established, but foreign breed. It is equally true with regard to the origin of the American-Merino, and all these instances go to show, that it is easier and more profitable to procure a satisfactory race of sheep by crossing breeds, than by a course of acclimatizing a single race by close breeding. The fact is, that almost every established breed, has gained its valuable qualities in a comparatively narrow and closely bounded locality. The quality of soil and water, and peculiarities of climate, have had much to do with forming the character of the breed, and when by emigration, differences in these necessarily occur, the established character cannot be maintained, but almost universally rapidly deteriorates. There are isolated instances, in which the result of the change has been favorable, and the character of the breed has improved in the change; as for instance, in the case of the American-Merino among sheep, and the Jersey and Short-horn among cattle. In these instances, the influences of our climate and soils have been remarkably favorable, and the descendants of imported animals have greatly surpassed their ancestors in valuable qualities. It is no derogation to the skill of American breeders to say this; on the contrary, it is by their skillful management that these influences have been made to tell so favorably. There are amply sufficient examples of failure, that could be pointed out, to show that it is not every breeder here who succeeds, and that, although our climate may be a help, yet it is not alone sufficient for success. With regard to sheep, there is yet an extensive field for enterprise, in the way of breeding what may come, in time, to be American races. We have a wonderful diversity of soil, climate, locality, and pasturage. We have the hills and mountains of Wales and Scotland; the rich meadows, the seaside pastures and "downs" of England; the plains of Hungary; the Steppes of Russia; the dry pastures, both hill and plain, of Spain; the arid plains of Australia. All these are within our territory, and within our borders every race of sheep, noted for its valuable fleece, or acceptable mutton, can find a counterpart, if time and skill are turned towards the business of breeding such as may be suited to each locality. As an instance of a worthy attempt at the production of a native race, suited to a very peculiar locality, viz., the rich Blue-grass region of Kentucky, we notice the Improved Kentucky Sheep, which have been bred by Mr. Robert Scott, of Frankfort, Ky., since 1832, or during 45 years, and we here give a portrait of one of them. In a communication, for the whole of which we regret we have not space, Mr. Scott writes as follows.

"The grand desideratum for the West and the South, is a sheep of large size, heavy fleece of medium wool, early maturity, active habit, and with a constitution strong enough to subsist, in the large pastures and open woodlands and prairies, both during summer and winter, without shelter or stall feeding, which last will always be reserved for other animals of greater value, and which require greater care.

"While all the various and excellent English breeds have their peculiar merits of form, and flesh, and fleece, and will always be in demand for them, yet any breed, which will possess the above qualities in the highest degree, can not fail to stand the highest in the estimation of practical sheep-raisers. These qualities may be largely, if not fully, combined in the same animal, by blending the different breeds which possess them in the highest degree. In breeding my flock I have, in turn, used all of the most popular English breeds, at different times; procuring new rams every two years, selecting such as possessed, in the highest degree, the qualities which I wished to transplant, and choosing for each male the females which were most in need of those qualities, or others which would develop them most highly. Since the early Saxony cross, I have bred to no horned sheep; and I have always used the rams of the purest blood which I could obtain, as, in them, the qualities which I wished to transplant, were most deeply imbedded, and would therefore most likely be transmitted to their offspring. Thus it appears that the 'Improved Kentucky' are about as pure-bred as other popular breeds; and the more especially, as they have in them but one (the original) crop of native or common sheep, all other blood in them being called pure. To produce the greatest uniformity, and to obliterate all differences of form, fleece, or flesh, I have several times bred to my own 'Improved Kentucky' rams, selecting them for the ewes so as to most successfully accomplish the desired object; and the flock is as uniform as the flock of any other breed.

"Besides many other premiums awarded to them in Kentucky, and four in other Western and Southern States, a premium was awarded to them by the

"JERSEY ROSALEE," THE PROPERTY OF S. G. LIVERMORE, CEDAR RAPIDS, IOWA.—(*See page* 259.)

Ky. State Agricultural Society, in the year 1856, and by the U. S. Agricultural Society, when the Fair was held in Louisville, Ky., in 1857; and a special diploma and medal were awarded by the great Centennial Exhibition at Philadelphia, to the wool of this breed of sheep, and to blankets made of it, and to their dressed skins with the wool on them, none of which were specially prepared for the occasion."

Among the Farmers.—No. 18.

BY ONE OF THEM.

In the article under this heading, which was printed in the February number, and, of course written in December, I deplored the lack of thorough teaching of the laws of breeding in connection with our Agricultural and Scientific Schools.

"The Yale Lectures on Breeding."

I recently received a schedule of a course of lectures delivered by Prof. Wm. H. Brewer, of the Sheffield Scientific School of Yale College upon this subject. The lectures were, it seems, delivered between the first of January and the first of April. The thoroughness of the programme is admirable, and its scope embraces the whole subject, with perhaps a single exception, to which I will allude. A letter written to Prof. Brewer, that I might learn more about this course of lectures, brought an answer, a part of which I take it, it is no breach of propriety to give you for publication, merely remarking, that the establishment by Yale College of the Professorship of Agriculture, which Prof. Brewer now fills, was the first recognition of agriculture as a science, as well as an art, by any American School of Learning. It is certainly most agreeable to the alumni of this school, (among whom are your Mr. Judd and "your humble servant")—to know that "Old Yale" is still giving good attention to Agricultural Science. Prof. B. writes:

"NEW HAVEN, May 15th, 1877.

* * * "Now a word on the history of those lectures. The school was expanded in 1864 by the addition of three professors, Verrill (Zoölogy), Eaton (Botany), and myself. Johnson and I completed a plan for an Agricultural Course in 1865, and as a part of that course, I gave a course of lectures on breeding before the class in January to March, 1866; and I have delivered a course each year since on the same subject. Becoming more and more interested in the work, and working over my notes last year, as knowledge increased, I systematized the matter more and more to my mind. In the spring of 1875 I was invited to go to California and deliver the course, with some other lectures, at the University of California. In accordance with the custom there, a *synopsis* of the topics was afterwards published in the 'University Bulletin.' Seeing how handy such a synopsis was, I have, for the last two years, prepared one, such as I sent you, for the convenience of the class. This course is the *thirteenth* time I have gone over the ground, the number of the lectures varying from 10 to 23—the fullest thus far given."

Coming, as this course does, just at the time when young farmers can best leave their avocations for a couple of months, I should think Prof. Brewer's lecture-room would be crowded. The exception to which I refer may be called

Breeding Brains,

and I am by no means sure it was not exhaustively treated under the head of Instinct.

A few days ago I took a run up to Colonel Hoe's beautiful residence, "Brightside," Morrisania, N. Y. The trip is most of the way by boat, and a delightful sail it is up the East River, under the cobwebs that precede the stretching of the Great Suspension Bridge, along by the navy yard, and Blackwell's Island, and Hell-gate; by the green slope of more islands, and the brick and stone of more almshouses—by broad stretches of troubled waters, opening as long vistas bounded by more green slopes and waving trees, and pleasant country seats—all on the right, while on the left, spreads out the ever varying yet always similar prospect of wharf, and street, and distant spires, and housetops, and chimneys, and the constant hum of the busy, busy city, which so makes its presence felt, that one feels as if the *din* were a part of the landscape.—Well, of all this I hardly caught a passing glimpse, for I fell in with my venerable friend, Col. J. H. Wallace, of "Wallace's Monthly," as true a horseman as ever tightened a girth, and with him the time sped quickly. He has been thinking and writing upon the breeding of horses with reference to their psychical nature, a subject to which my own thoughts have been a good deal directed of late, and which I think has engaged the attention of others, though I have seen little written upon it except indeed the articles of Col. Wallace.

We have been studying form, and style, and muscles, bone and sinews, bony leverages, constitution, endurance, lungs, nostrils, and every thing else except that which really makes a horse go. How often do we see two horses well matched, to look at, of the same color, alike in style, weight, muscle, and bone, and yet so ill-mated in temper that, while they are together, one does all the work, and the other gets nothing but whipping and imprecations. What is the difference?—Clearly, one has a *mind* to do his best, and the other is innately lazy. Training will help the matter a good deal, but that, if the horses are kept together, will spoil one while it makes the other. If each be trained to do his "level best" all the time, the horse with a will, will keep just so far superior to the other as he was the first time they were hitched up together. It is certainly within the province of breeders to consider these things more than we ever have done, and to breed spirit, docility, honesty, ambition, intelligence, and affection. We err in

Selecting and Training Stallions.

In those countries where, as a rule, horses are used entire for all ordinary work, the *natural temper* of horses is very much better than with us. Here, and in England, stallions for breeding purposes are selected with reference to external and useful characters and to pedigree. We usually geld early and break our horses afterward. The result of this is that, though the breaking is easier, yet the geldings are not half so well trained, and the stallions are apt to be half broken, and often ruined in temper by the breaking process.

In France they rarely geld a horse unless he shows vicious traits, and then, they always do—if they can't sell him to some American. As a rule, the temper of French horses is excellent, but one was landed here a few weeks ago—a superb fellow—that was as wicked as a thorough-bred. I fully expect to hear of his killing one or two men before long, for he is as intelligent as he is vicious. I had almost thought it was not in the breed to be right down "devilish," but this case undeceives me. Still, the breed is an excellent example of what selection and early, steady, firm training will do for the horse. Such an exception proves the rule.

The thing for us to do in making the new, improved, perfected breed of American trotters, is to breed brain, or intelligent force, which is *willing* to do its best. It can just as well be done as not, but it will take time and study. Instinct, which is innate intelligence and perception, has been cultivated in some directions astonishingly. Sporting and shepherd dogs are examples in point in other races, and the almost uniform and no less extraordinary intelligence of the Arabian horse, is at once an example of what has been accomplished in the course of ages, and an indication of the most obvious source of improvement for breeds of horses of low psychical development. At the same time, among modern races of horses which have any reputation for extraordinary merit, either for speed or draft, those in which there is the most Oriental blood, stand pre-eminent. The amount of the "blood of the Desert" claimed for the English thorough-bred is so great, that many are even unwilling to admit that there has been any admixture of cold blood. The merits of the Percheron are claimed to be due to Arabians, imported into Normandy at the time of the Crusaders, while the positive pedigrees of the Orloffs, show exactly the proportion of Arabian blood in their veins, and how it has been preserved and used so as to give the intelligent, nervous, psychical qualities the preponderance.

A Move in the Right Direction.

I was gratified to learn, through a private letter received a few days ago, that, under the proprietorship of Mr. G. D. Coleman, an extensive stock farm is conducted in Brickersville, Pa., by Mr. Colin Cameron. Here the experiment is being tried of crossing an Arabian stallion, possessing unusual weight and bone, and intelligence, known as the *Jenifer Arabian*, upon mares of various breeds, constitutions, and temperaments, in the expectation of establishing from among those with which the cross nicks well, a breed of intelligent, fast trotting, handsome horses, which will ultimately be remunerative. It will really be surprising if some very good results do not come from several of the crosses. Among the mares in his seraglio are two old-fashioned Percheron mares, weighing about 1,300, and capable of trotting a mile in 4 minutes, four half-bred Percherons, a Black-hawk Morgan, a Black-hawk Hambletonian, a Hambletonian, American Star, three other Hambletonian mares, one English bred, without a pedigree, one thorough-bred daughter of Lexington, and several high-bred road mares of notable excellence. By old-fashioned Percherons, I mean the small high-bred ones, of enormous muscle and power for their weight, and spirit to trot quite fast. If I am not mistaken, I have seen these mares at J. J. Parker's, in Westchester, who, I believe, imported them, and they are of the genuine type, which crossed, or rather where bred, for generations, with the heavy Normans, produces the so-called Percheron-Normans, so much in vogue just now, particularly at the West, and which the western people are so sensitive about having criticised. It would be better in the end for western farmers if more of their journals could appreciate and would advocate *quality* in French horses rather than mere bulk. There is enough of the spirit of the Arabian preserved in the horses of Perche to impart to many of these ponderous Normans, action and style, vigor and endurance at a fast gait, and real blood-like qualities. Nevertheless, the animal is a grade to all intents and purposes, except indeed in those cases in which the cross was taken several generations back, and by judicious selection has been perpetuated.

If the French kept pedigrees, it would not be such a lottery to select a really good big horse, but they keep none, and hardly know, or care to know, the dam's sire, or even which sire of several may have gotten her foal. When real Percherons are desired, it is not so hard to find them, though they are no longer numerous, but one recognizes them by their powerful compact forms, wonderful vigor and spirit, style and action, and the general perfection of the type, most frequently seen in horses weighing 1,300 to 1,450 pounds, more or less.

[By a curious coincidence our correspondent has selected a topic, which formed the subject of an editorial given last month, and illustrates his views on breeding by reference to the very animals of which we there gave portraits. His article was of course written without any knowledge of the editorial, and we are glad to have the points made there confirmed and enforced by one of so much experience, and so close an observer, as our friend who goes Among the Farmers and is "One of Them."—ED.]

The Use in Keeping Pedigrees.

The best pedigree in the world will not make a poor animal a good one—and having no pedigree at all, or a very poor one, will not hurt a meritorious animal, judged merely by points. These are almost self-evident truths, and they are the ones used as arguments by careless stock-raisers the world over, who wish us to believe that their method of pairing good, well-formed animals is all sufficient. Now every *breeder* knows, that the value of a pedigree consists in the systematic breeding which it shows, and which should agree with the appearance of the animal itself.

A good pedigree is something of slow growth. It is a record of the judgment of the breeder, or breeders—probably of several; and it is a history of the development, and of the fixing of, valuable characteristics, as well as of the weakening of undesirable tendencies. Short-horn breeders seem to understand this, but breeders of some other breeds of cattle and horses, apparently, do not bear it sufficiently in mind, if even they take it into consideration at all. A tyro of wealth spends his money freely for a herd ; that does not make him a breeder. If he owns the stock long enough to breed two or three generations, he may prove himself worthy the name, otherwise the herd runs out and is sold for very little. The action of the Short-horn breeders, in admitting to record animals showing a certain number of thorough-bred crosses, is promotive of good breeding, inasmuch as it will make breeders careful to preserve their pedigrees, and to make good crosses. The system of recording the pedigrees and performances of horses, is productive of similar effects, and the general result is an increase of value in pedigreed stock, and an understanding of what constitutes merit in pedigrees.

It is a little difficult to see the value of a pedigree, in judging of a milk and butter cow like the Jersey, except, indeed, as the pedigree indicates purity of blood. If we could see a record of the performances of the cows as yielders of butter, both in the line of the sire and of the dam, as we may study in the trotting registers the performances of the horses, we might soon hope to make great progress in breeding butter cows, and be morally certain that the number which would annually die of milk fever would greatly increase. What a stopper this is upon breeding butter cows!—Is there no sure remedy?

Talks on Farm Crops.—No. 5.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

Merchants, manufacturers, bakers, professional men, mechanics, capitalists, laborers, millers, railroad men, ship owners, farmers, forwarders, rich and poor, high and low, one and all, are hoping for a big crop of wheat the coming harvest.

But nothing can now be done to secure such a result. We can only hope and wait. The time for work was a year ago, or even two or three years ago. We cannot make land dry, clean, and rich in a day. Spasmodic efforts are of little avail in agriculture. We must look ahead, and lay our plans and make our preparations for many days, months, and years in advance. We want, as farmers, to cultivate an abiding faith in our calling—to feel that our products will always be wanted.

"Never mind all that," said the Deacon. "What we want to know is how to make farming pay. We don't raise wheat because people must have bread to eat, but because we want to earn a living for ourselves. And I tell you, farmers have seen hard times for a few years past, and if we are going to have better prices for wheat, corn, oats, beef, mutton, wool, and pork, we can all understand that it will be better for farmers and better for the country. It is nothing new. We have had such times again and again. High and low prices succeed each other, and will continue to do so. But what of it?"

"Simply this, Deacon," said I, "that high prices are of little benefit to the farmer who has little to sell. It is the good farmer who feels the effect of good prices. A farmer who only half works his land, and raises only average crops, will never make much money, no matter what prices may be. This was seen during our own war. The farmers who paid off their mortgages were the men who had previously got their land in condition to produce good crops, and who kept good stock and fed liberally. They had something to sell when produce brought high prices. It will be just so in the future. But it is a lesson most of us are slow to learn."

As I have said, it is too late to do anything to increase the yield of wheat this year. But in three months we shall be busy sowing the seed for the wheat harvest of 1878. We can do much, during these three months, to increase our chances of securing a large and profitable crop.

There are three prominent plans of preparing land for wheat. 1st.—The old English summer-fallow. 2nd.—The modern summer-fallow. 3d.—Sowing after spring crops, or after wheat, or on a fresh-turned clover-sod. The last is seldom practised in this country. In England it is very common, but in our dry climate it can be adopted only on very light, easily worked land.

"In England," said the Doctor, "I saw farmers plowing the clover sod and sowing the wheat the very day the land was plowed. And as you suggest, the same thing might be done here on light land ; and on heavy soil when we have rain enough to thoroughly soak sod land—which is rarely the case."

"That is true," said the Deacon, "but two years out of three we are suffering from drouth just at the time when we want to sow wheat."

"And consequently," said I, "we must get our land plowed and worked down fine for weeks before we want to sow. This is our only safe plan. A rain that would be of little use on sod, or on a rough, cloddy field, might be sufficient to make a fine, mellow soil moist enough to cause wheat to germinate at once, and give it a good start. How best to get land in this condition, is the most important question for the wheat-grower. On very heavy clay land, it may be necessary to plow early in the spring, or in the fall previous, and to plow again during the summer, and again before sowing the wheat. This is what I call an old English summer-fallow. Three or four plowings, followed each time with roller and harrow, or cultivator, make the land mellow and moist, and in fine condition for the seed."——"No doubt about that," said the Deacon, "but it costs too much. It will not pay."

"There I think you are mistaken, Deacon," said I. "You must recollect that the work is done after we are through planting corn, and when there is often little for the teams to do. Farmers often let their horses lie idle while they are hoeing, or fighting the potato bugs. Hire an extra man and keep the horses at work. A good three-horse plow, that will cut a fifteen or eighteen-inch furrow, is one of the cheapest and most effective implements yet discovered for working the land."

What I have ventured to call "A modern summer-fallow," is decidedly the most popular in this section. A clover-sod is broken up in June, and this is all the plowing that the fallow receives. All the rest of the work is done with the roller, harrow, cultivator, or gang-plow. The sod is not disturbed. The surface-soil is stirred sufficiently to keep down the weeds, and if the work is well done, we have four or five inches of fine, mellow soil on top of the decaying sod, ready to receive the seed in September. A little fine manure spread on the surface, and harrowed or cultivated in, is a great help. And if we are going to get a good price for wheat, we could use guano with profit.

Now, as to which of these two methods is best, will depend much on the character of the land. My own opinion is, that we are in little danger of plowing the land too much. Still, on light, sandy loam, and especially if a little manure or guano is spread on the surface, it may be unnecessary to plow more than once. But on heavier land I think it is far better to plow three times—say once in June, again the last of July, and finally just before sowing.

But whether we plow only once, or whether we plow twice, or three times, we must not allow any weeds to grow on the fallow. Even if the weeds are all killed before sowing the wheat, we must remember that the growing weeds pump up a large amount of water out of the soil and evaporate it through their leaves. And one of the great advantages of a fallow for wheat is, that it furnishes a moist seed bed.

In sowing wheat after wheat, or after barley or oats, our principal aim must be, to retain as much moisture in the soil as possible. As soon as the crop is harvested, start the plow. Turn in the sheep and pigs to glean the stubbles, but do not wait for them. And no matter how dry the weather is, or how hard the land, do not wait for rain. Put on three horses and break up the soil. Follow with a roller. Then harrow, and roll again wherever the land is cloddy. The roller will break some of the clods, and press others into the soil. Go over the land again with a harrow, and this will pull up the clods and leave them on the surface, where the roller will have another chance at them. By repeated harrowing and rolling, as here indicated, the land can be reduced to a comparatively fine condition. At any rate, no matter how dry and hard it is, enough of the clods can be broken up to furnish fine soil to cover the clods that cannot be broken. Stick to it until this is accomplished, and before leaving the field, let every clod be pressed down into the fine earth by the roller.

On my own farm it is only on portions of the field where such work is necessary, and we do not go over the whole field, but only on what the men call the "clay spots." We go round and round on them with the roller and harrows, until the clods are all broken up. When thoroughly reduced to a fine, pulverized condition, these clay spots are the best wheat land on the farm. In the summer-time, the men are always longing for rain when they are plowing or harrowing, or rolling, or cultivating these clay spots. Of course, a good soaking rain would facilitate the work, but the land is in far better condition afterwards, if the clods are knocked to pieces when dry. And in point of fact, the clay-land farmer, instead of wishing for rain, ought to be thankful that we have such a drying climate. Clay land, thoroughly worked when dry, makes a splendid seed-bed as soon as we have a good rain.

"But suppose you do not have a rain," said the Deacon, "what are you going to do then."

"The land," said I, "will not be the worse for the working. We have three or four inches of fine soil on top, and this acts as a mulch, and keeps the soil below much more moist than it would be if left cloddy or unplowed. Let it lie until you want to sow the wheat. Then start the plow, and I shall be greatly mistaken, even if we have had no rain since the land was plowed, and harrowed, and rolled, if there is not two or three inches of the lower soil in a moist condition. Drill in the wheat at once, and if the weather is still dry, and likely to stay dry, roll. If not, not. When the soil is moist and mellow underneath, a little roughness on the surface is no objection for winter wheat."

As I said before, the indications are favorable for better prices for wheat, and it will pay to take more pains to prepare the land properly. When this is done, *then*, but not until then, it will probably pay well to buy some good commercial manure, to sow on our wheat this fall. We are getting artificial manures of far better quality and at cheaper rates than ever before, and in many cases we can afford to use them freely. If I was going to buy manure to sow on wheat this fall, I would select that which furnished 40 to 50 pounds of available nitrogen, and 40 or 50 pounds of soluble phosphoric acid per acre, at the cheapest rate. Nearly all the artificial manures offered to us, contain too much phosphoric acid, and too little nitrogen for wheat.

Pay no attention to those who tell you our soils are "exhausted." We must drain the land where necessary ; kill the weeds and cultivate thoroughly; provide a good seed-bed, and drill in the wheat in good season, and our chances for a good crop are as favorable as they ever were.

Of course we shall use all the manure we have. The trouble is that we do not have enough of it—or rather we do not make it *rich enough*. It contains too much straw—too much carbonaceous matter and potash, and too little grain, bran, or oil-cake—in other words too little nitrogen and phosphoric acid. The remedy is to feed our stock better—or buy nitrogen and phosphoric acid in the shape of guano or other commercial fertilizers.

I wish we might have a great crop of wheat in 1878, and get $1.75 to $2.00 a bushel for it. And *now* is the time to make preparations. I do not differ with those who recommend growing more green crops instead of summer-fallowing. But as we do not, or can not, or will not, raise the green crops, let us summer-fallow for winter wheat, and fall-fallow for spring wheat.

The Balance of Trade.—The Bureau of Statistics publishes some very interesting figures relative to the business of the country in its last quarterly report. The total imports of the country for the year ending June 30, 1876, were $476,677,871, and the total exports amounted to $596,890,973, leaving a balance in our favor of $120,213,102. In September the gain in our favor was even greater, equalling more than 20 millions of dollars. The gain during the whole year 1876 may probably amount to a balance in our favor of $320,000,000, a most gratifying change in our business relations with foreign nations, which must, in a very short period, free us from our financial and business difficulties.

Hints and Helps for Farmers.

Feed-Rack for Sheep.—S. S. B.," South Bend, Ind., sends the following description, with sketch, of a feed-rack for sheep. The rack (fig. 1) is made of poles for the bottom and top, and cross-bars fitted into them, as shown in the engraving. The bottom bar slides loosely in brackets, which are fixed to the wall of the shed, and the upper bar is secured by a cord, which passes over a small pulley in a hole in the wall above the rack; a weight being attached to the outside end of the rope, serves to keep the rack always against the wall. When hay is put into the rack, that is drawn down, and when filled, is pushed back against the wall, holding the hay closely, and being kept in place by the weight. This prevents the hay from being pulled out too freely by the sheep or cattle. It is recommended that the grain-trough be placed beneath a rack of this kind, so that the chaff which falls from it, may be caught in the trough and saved for use, instead of being trampled under foot.

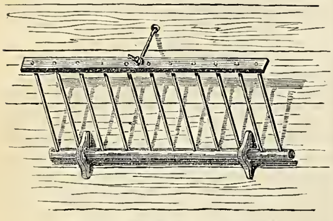


Fig. 1.—feed-rack for sheep.

Equalizing the Teeth of a Cross-cut Saw is done by a contrivance proposed by S. S. B., and shown at figures 2 and 3. At *A*, fig. 2, is represented a piece of inch board, cut to an arc of a circle, equal to that described by the teeth of the saw, when in proper condition. The usual form of the saw is that of an arc of a circle of 20 feet radius, or 40 feet diameter. To form the curve, a piece of cord, 20 feet long, is fastened at one end to a nail on a barn floor, or to a peg stuck in the ground. Then with a pencil fastened to the other end, the proper curve is marked upon a piece of board, placed 20 feet from the nail or peg. The board cut to this line is laid upon the saw, as shown in the illustration, and is clamped to it with thumb-screws. Then a file-holder and guide is made, as shown in fig. 3; the piece *B* being cut to fit the curve of the board, *A*. A piece, *C*, is screwed to *B*, to which a file is fastened by three screws, two at the shank, and one at the toe; and a handle, *D*, is also fastened to it. The position of the file is shown by the dotted line on *B*. The board *A* (fig.2) is clamped to the saw, with the curved edge properly placed with regard to the desired line of the teeth; the curved line of the guide for the file is placed on the edge of the board, and is pushed backwards and forwards, until every tooth is brought to an equal length. Until this is done, the saw will not work well, it will either jump when used, or run to one side or the other, as a tooth longer than the other may be set to one side or the other. The board *A* should be one inch, and the piece *B* five-eighths of an inch thick; the difference being the proper allowance for the set of the saw-teeth.

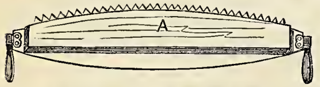


Fig. 2.—setting cross-cut saw.

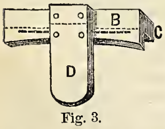


Fig. 3.

A Cheap Portable Crane.—Mr. L. D. Snook, Yates Co., N. Y., sends drawings of an arrangement for raising or unloading boxes, barrels, bales, stone, etc., which is illustrated in figure 4. The apparatus can be made of any size desirable for the work to be done. The manner of connecting the lever to the upper piece of the frame is shown in fig. 5. From the short end of the lever a rope passes under a pulley, and thence around a windlass, which is secured by wooden boxes. When the windlass is turned, the rope is wound about it, gradually pulling the short end of the lever toward the ground, and elevating the opposite end. For most purposes a ratchet should be attached to the windlass, that the weight may be held at any point desired, and for raising heavy articles, the frame should be staked to the ground or floor, at or near the pulley. The iron staple, in fig. 5, should fit the frame very loosely, so that the end of the lever may be moved laterally several degrees if desired.

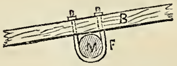


Fig. 5.

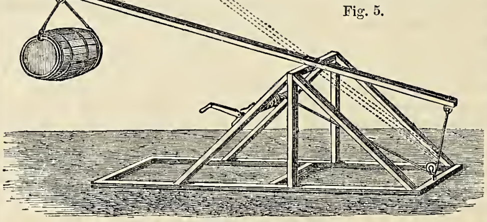


Fig. 4.—portable crane.

Building and Staking Stone-walls on Wet Soils. By L. D. Snook.—When stone-walls are built upon wet soils they are injured each spring by unequal settling, as the frost leaves the ground. If some plan of underdraining be adopted to carry off the water from underneath and at the side of the wall, this trouble will be avoided. Walls already constructed, may be thus protected by an underdrain located six feet on each side of the wall, running parallel to it. This plan not only saves the wall, but is beneficial to the soil, for at least twenty-five feet upon each side. However, if a wall is to be built, a tile drain may be placed two to two-and-a-half feet under the wall, as shown in figure 6, but it should be well and thoroughly done, for should it become stopped up, its location would prevent repairing it. In figure 7 is shown a method of staking walls in localities where the soil is not readily drained; also as an economical and less troublesome method of keeping stakes in position, free from decaying, etc. When building the wall, there is placed crosswise, near the bottom, a piece of wood, 4 inches wide and about 2 inches thick; pine or oak slabs from the saw-mill will answer. This projects from the wall one foot on each side. Holes an inch and-a-half in diameter are bored, about three inches from each end, for the reception of the stakes, as shown in the engraving. The smaller and shorter stakes used are never thrown out by the action of frost, and the lower end will resist decay three times as long as those of stakes placed in the ground.

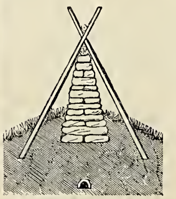


Fig. 6.

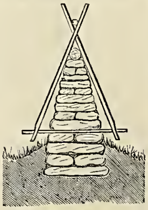


Fig. 7.

Automatic Tide Water Sluice-Gate.

In the drainage of tide-water marshes, much difficulty is frequently encountered in procuring a sufficiently tight closure of the sluice-way against the rising tide. As the in-flowing current of the tide is relied upon to close the gate, this is not, and can not always be effective so soon as may be needed; for until the tide has risen sufficiently to press with considerable force against the gate, the in-flow is not stopped, and the water enters the sluice and rises upon the marsh. To have some automatic arrangement then, by which the gate can be effectively closed *before the tide reaches it*, will be very valuable. Having been engaged in the drainage of a tide-water marsh, to meet the difficulty here referred to, we applied the contrivance illustrated in figure 1. A tight door was fitted to the sluice, and hung upon hinges, as shown in figure 3, the bar upon which the hinges turned being passed through the eyed straps and fastened by a nut and washer, so as to move easily. A bent arm, made of either light strap-iron or of stiff wood, is attached to the bottom of the sluice, as shown, and is connected to the gate by a strap; it is furnished with a ball or float of light pine wood, the weight of which opens the gate when no longer supported by the water above the level of the bottom of the sluice; and the bouyancy of which closes the gate when it is lifted by the rising tide. This is made clear by the dotted lines in the figure, which show the position of the float and gate at high water, and the dark lines show its position at low water.

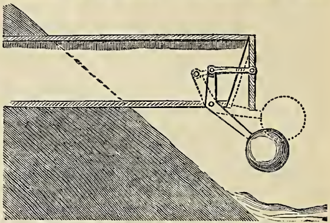


Fig. 1.—gate for tide water sluice.

Another kind of float is shown at figure 2. This is made on precisely the same principle as the one before mentioned, but its mode of operation is different. A gate is made to fit the sloping mouth of the sluice, which, when not closed by the pressure of the water, or the buoyancy of the float, drops in to a perpendicular position by its own weight, and opens the sluice. The position of the gate is then seen by the dotted lines. When the tide rises, the

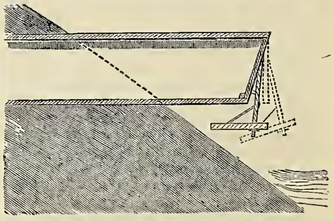


Fig. 2.—gate for tide water sluice.

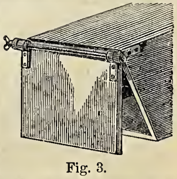


Fig. 3.

float is lifted, and the gate is closed, as shown by the dark lines. The float in this case is a piece of pine plank, 3 inches thick, and 2 or 3 feet long, so that it shall be sufficiently buoyant to close the gate firmly. The float is braced to the supporting bar by an iron rod, tightened by a screw and nut. The floats in either case should be made of light, dry pine, and be thoroughly well painted, to prevent them from becoming water-soaked, by which their effectiveness might be lessened.

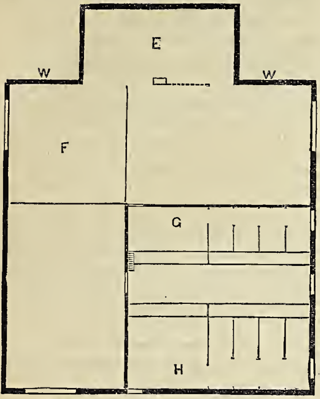


Fig. 1.—GROUND PLAN OF BARN.

Plan of Barn, with two Floors and Basement.

The accompanying plans of a barn, sent by Elder Brothers, of Darlington, Pa., are intended for a mixed farm, and to be built against a bluff that has a rise of about 14 feet, so that a driveway to the third story may be made with a moderately easy grade. It is intended to have 16 glazed windows for the stables, and 38 Venetian windows for ventilation to the barn above. The roof is intended to be one-third pitch, and to project two feet at the eaves. There are three ventilators in the roof, and the spouts of these passing through the floor may be used for hay or straw shoots. The plan of basement is given at figure 1. The root-cellar is at *E;* the stable or pen for small stock, *F*, is at the left, and the cow and horse stable on the right, at *G* and *H.* The wall at the front of this ground floor is two feet thick, of stone; the retaining walls, *W, W,* at the rear are 5 feet high; these are flanked on each side of the root-cellar by walls 10 feet high, and at the rear of the cellar the wall is 20 feet high. The doors and windows of this basement are shown at figure 2, which gives a view of the frame-work at the side of the building. The windows are here shown at *W, W.* The view of the section of the frame is given at figure 3, showing the side of the first, second, and third floors, with the stairways. The end view is given at figure 4, and shows the manner of framing. The plan of the second floor is given in figure 5; the stairways being at *A, A;* the bays at *B;* the shoots at *C, C;* the sloping driveways to the second and third floors being also shown.

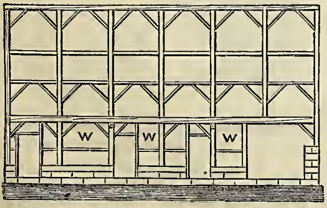


Fig. 2.—CROSS-SECTION OF BARN.

Management of Ducks.

A subscriber desires to know the secret of success in the management of ducks. First as to location. While it is true that ducks will live, and thrive to some extent, without water to furnish food, they are raised with most profit only where water is plenty, and well supplied with fish and other animal food. The paradise of ducks is a salt-water cove, fed by a fresh-water stream, where fish come in for spawning, and every tide brings a variety of food in from the sea. The range on the land may be very limited, if they have free foraging in such a cove. The feed in such a place is practically unlimited, while the water remains open, and the flock, however large, will need very little other food. Corn, or some other grain, however, should be kept always within their reach, that they may never lack food, or stray too far from home. If such a cove, or sea-side location, is not at hand, the next best place is a pond or stream, near the farm house. If the water swarms with frogs, fish, and insects, and has a marshy shore, it is all the better. In an inland location, they should have a wider range. A wet pasture, or swale, of an acre or more, is especially desirable. The location selected, the next thing is a duck-house, or pen, where they may be confined at night, and during the extreme winter weather. The laying season extends from February to September. Young birds of the early hatch will some times lay in October and November, but this is not the rule, and is not very desirable, as it will not pay to raise ducks in the winter. The duck-house may be ornamental and expensive, or cheap. It should have a roof for shelter, and a board floor, or in the absence of boards, be kept littered with dry sawdust, or refuse matter; near the coast, sea weed is often used. The object of the house, or pen, is to save the eggs, and to keep the feet from freezing during the winter. If they are shut up at night, during the laying season, few eggs will be lost. Although ducks are quite as hardy as barn-yard fowls, snow and ice are not good for them, and it saves much food in winter to have them roost upon a dry warm bed. They commence laying much earlier, and continue later for good winter care. The hatching of eggs may be kept up from March until September. As mothers, we greatly prefer hens to ducks. They may be raised without water to swim in. The young have so many enemies, and are so eagerly hunted by Norway rats, that it is much better to keep them confined within narrow limits for the first six or eight weeks of life. They do not require a mother for more than three weeks. After that, they will do quite as well with an old box or barrel for their roost at night, and for shelter from storms. They are as sensitive to wet weather as chickens, and without shelter, drenching storms will kill them. They are also liable to be injured by the mid-day summer sun while very young, and the duck-pen should have shade of some kind during the middle of the day. For feed, we have found nothing superior to coarse-ground Indian meal, scalded, and mixed with fresh or skimmed milk. As they grow older, wheat and other grain may be added. Unbroken corn should not be given until they are four months old. They delight in earth worms, and if they have the run of an old garden or orchard, that is occasionally spaded or plowed, they will take care of the worms and insects. With a good location, ducks can be made as profitable as any other poultry. CONNECTICUT.

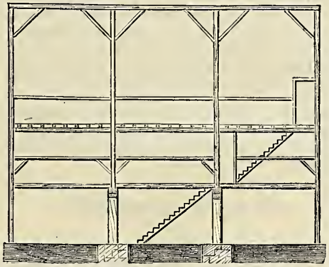


Fig. 3.—LONGITUDINAL SECTION OF BARN.

Irrigation of Crops and Meadows.

The old proverb about locking the door after the steed is stolen, may be of wider application than simply to stable doors. Owners of horses keep their stable doors locked, and similar provisions for safety are wisely made in other cases. Just now, the drouth in California furnishes a timely reason for considering the necessity for providing means and methods for irrigating crops, although there may not be a necessity for using these every season. The advantage of having a resource at hand in case of need, is just now very apparent to farmers in California, where the great San Joaquin Valley, the garden of that rich State, when there is abundance of water, is now bare of vegetation, and there having been only two inches of rain, crops are a failure. Irrigating canals cost nothing, after the first expense of construction, and are ready for use when such an emergency as the present arises.

So, with meadows, in other places, where these may be irrigated, and ordinary crops are measurably safe against drouths. To lower the gate, and raise the water, turning it into the permanent channels, is only the work of a few moments, and may save the crop of grass, or preserve the pasture from drying up. It only needs that the facilities should be provided, the cost of which, in many cases, would be very trifling indeed. The time to prepare

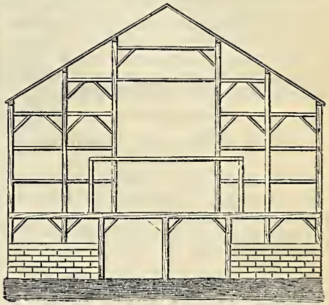


Fig. 4.—CROSS-SECTION OF FRONT OF BARN.

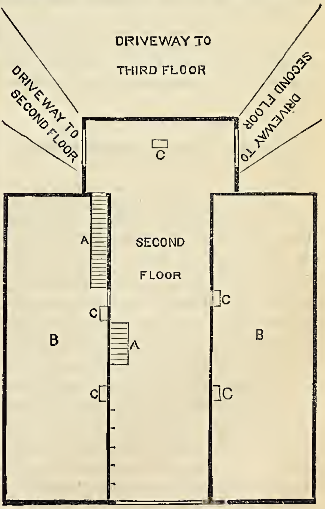
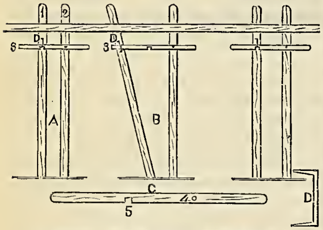


Fig. 5.—PLAN OF SECOND FLOOR OF BARN.

for a dry season is before it occurs, as it is too late to go to work when the need comes. The farmer who has the means of irrigating his meadows, is free from the painful apprehensions of the one who watches the clouds with anxiety, hoping for rain, or fearing a want of it. Fortunately, the necessary means are, in the majority of cases, easily and readily provided, and it should only need to awaken the farmers to the necessity for making the proper provision, to cause them to take measures to secure themselves against danger. Farmers can no longer plead a want of knowledge as an excuse for not turning to account such means of irrigation as their surroundings afford. The work on Irrigation, by Henry Stewart, and recently issued by the Orange Judd Company, is commended to those who would improve their farms by this means.

Method of Fastening Stanchions.

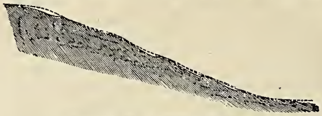
T. G., Halifax, Nova Scotia, sends a sketch of a simple contrivance for coupling cattle stanchions, and writes, after having tried some half a dozen different kinds of fastenings, that he put this one in operation in his stable, and finds it work very satisfactorily, being simple, cheap, durable, and effective. It consists of a piece of iron, *C*, $\frac{1}{8}$th inch in thickness, $1\frac{1}{4}$ inches wide, and 26 inches long, with a hole for a screw, and a notch; the hole and notch being 8 inches from either end of the iron. To fix it on the stanchion, screw it loosely on to the stationary stanchion, and run it through a square staple, *D*, (4 in. long), previously driven into the loose stanchion, (immediately above the head of the animal, but far enough away to prevent the head reaching it), so as to catch in the notch as in stanchion *A*. At *B* the stanchions are shown open; to shut them take hold of the loose stanchion, push it towards the fixed one, and as soon as the notch comes to the staple, it will readily and quickly catch itself. To open it, lift the end of the iron with the thumb, at the same time taking hold of the stanchion, when it will immediately come open itself.



METHOD OF FASTENING STANCHIONS.

To Prevent Washing of Hill-sides.

Much damage is done by the washing of hill-sides into deep gullies by heavy rains. Where sloping ground is cultivated this is unavoidable, unless something is done to prevent it. In some cases, deep plowing and loosening the subsoil, will go far to prevent washing, as it enables the water to sink into the ground, and pass away without damage, by slow filtration. But where the subsoil is not very porous, and when the rain falls copiously and suddenly, the water saturates the surface soil in a few minutes, and the surplus then flows down the slope, cutting the softened earth into many channels which by and by run together. Then the large body of water possesses a force which the soil cannot resist, and carries the earth down with it, often doing serious and irreparable damage in an hour or less. Of the many plans which have been suggested and tried to prevent this washing, the most successful is the terracing of the slope. This is done by plowing, with a swivel plow, around the hill, or back and forth on the slope, commencing at the bottom and throwing the earth downwards in such a manner that a flat terrace is formed, which has a small slope backwards from the front of the hill. When this terrace has been formed, the plowing is commenced ten or twelve feet above, and another terrace is made in the same manner. This is continued to the top of the slope. If thought desirable, the inner furrows on each terrace may be made to form a water channel, and this may be connected with the channel on the next slope lower down, in some safe manner, either by a shute of boards or of stone, to prevent washing of the soil at these points where the fall will be considerable. This, however, is a side issue, which does not necessarily belong to the main work. The arrangement of the hill-side is shown in the engraving, in which the original outline of the hill, and the arrangement of the terraces, which are cut out of it, are shown. When a heavy rain falls upon the terraced hill, the effect will be to throw the water backwards from the outer slope, into the channels at the rear of the terraces; and there, as well as upon the broad surface of the terraces, there is abundant means of escape by sinking into the soil. If not, and the amount of water is too great to be thus disposed of, it may be carried down the slope, by arranging the furrows as drains in the way previously indicated. Hill-sides of this character should be kept in grass, when the slope is too steep for comfortable plowing, after it has been thus arranged; or it may be planted with fruit trees, vines, or timber, upon the slopes, leaving the terraces to be cultivated, or the slopes may be kept in grass, and the terraces cultivated. But in whatever manner the ground may be disposed of, it would be preferable to leaving it to be gullied by rains, barren, useless, and objectionable in every way.


PROFILE OF A TERRACED HILL.

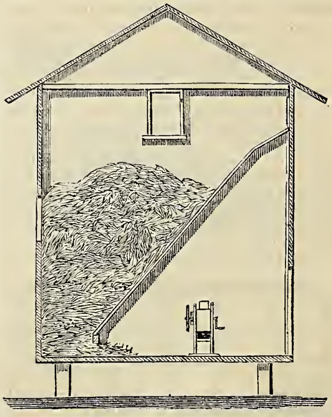
The Pig as a Manufacturer.

In the decline of the manufacturing interests, and the want of employment in the older States, let us not overlook the humble operative who always makes staple goods and sends them to a hungry market. He works upon coarse raw material, and manufactures pork, lard, and fertilizers, articles for which there is always a good demand on every farm, and a ready sale in the village markets. One effect of the large increase in the circulation of our agricultural journals has been to raise the price of fertilizers. The profits of cultivation are seen to keep pace with the use of fertilizers. The demand is especially lively in our large towns and their suburbs, where market gardening is followed, and more money is made from ten acres well tilled, than from many large farms. Six to eight dollars a cord is a common price for stable manure in these localities, but it is often much higher, and sometimes not to be had at all. In the flush times through which we have passed, many villagers ceased to make their own pork, and, even upon the farm, near good markets, it has been a question whether there was any profit in keeping pigs. In the olden time it was a main resource, and the corn-crib and the pig-sty were as indispensable as the barn and the cow-yard. The best manure made upon the farm was the contents of the sty. It made its mark upon the corn field, and the effects were seen for years after, in the oats and grass. After many years of experience with home-made manures and the manufactured article, we have come to the conclusion that no cultivator can afford to dispense with the labors of the pig as a manufacturer of fertilizers. It is the most satisfactory way of filling the pork barrel, and the lard keg, even if there be little economy in it. Swine pay largely in mixing and composting the contents of the barn cellar that receives the manure of cattle kept in the stables above. We have noticed this feature in the management of the most thrifty farmers recently visited. Pigs are kept at work from their birth to their slaughter. All refuse from the farm and garden goes to the barn cellar. Absorbents, in the shape of weathered peat and muck, head lands, swamp hay, salt marsh grass, sea weed, saw dust, leaves from the woods, were frequently added to keep the swine busy and to prevent all bad odors. The sty, which is so often a nuisance, by the use of absorbents, may be kept entirely inoffensive. The pigs not only thoroughly compost all this material thrown into the cellar, but by the tramping of their feet prevent excessive fermentation after it is mixed. The pig is especially valuable to the villager who is occupied as a laborer or mechanic during the day. He has his acre or two of land, his vines and fruit trees, which can be made to supply his table with comforts and luxuries the year round. The profit of his garden and fruit yard will depend almost entirely upon the free use of fertilizers. It is practicable to keep his soil in a high state of productiveness with fertilizers made upon the premises. If we made the most of our home resources to fill the larder, and store the fruit room, the times would not be so incurably bad.

Rat-Proof Corn-Crib and Shelling-Room.

BY J. W. P., WARREN CO., N. C.

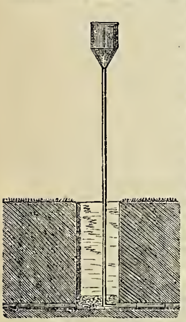
Many unsuccessful attempts have been made to devise a corn-crib that would be rat-proof. In spite of every precaution, rats and mice would find their way to the crib, and once there, it has been difficult or impossible to oust them. I have a plan for my own use, which I have no doubt will commend itself to others, especially in the South. A crib that is inaccessible to rats, is an impossibility. Nine-tenths of the damage done by rats, is due to their nesting in the grain. Their depredations would be hardly noticeable if confined to what they carried off. My plan effectually prevents nesting. Almost all Southern corn-cribs are built with upper and lower doors. When no more corn can be put in at the lower door, then the upper is used. Beneath this, a shelling-room is usually partitioned off, in which sacks are kept, and the corn shelled for mill. Instead of this square shelling-room, I have nailed slats three inches wide, one inch thick, and one-quarter inch apart, from the front plate of the crib, (which serves also for the sill of the upper door), to within 18 inches of the rear wall, and ten inches from the floor. These slats run down, and are nailed upon strong supports. The crib, therefore, is filled at the upper door. With every removal of corn from the bottom, the whole mass moves down as in a hopper, and it is obviously impossible far rats to nest. There are no hiding places whatever, as the crib is made of slats and boards—not logs. There are several other advantages obtained by this


SECTION OF CORN CRIB AND SHELLING ROOM.

plan. A good, clean shelling-room is provided; the corn being always in motion, is well ventilated; when filled for the first time, it is easy to make a mark for every twenty-five bushels, and as the corn falls in the crib, one can see at a glance exactly how much is used; but the greatest advantage is the very decided saving from destruction by rats. My crib has a capacity of 600 bushels, while the shelling-room may also be used for the storage of short corn, which is soon fed out to fattening hogs. The corn is stored by the use of rope and tackle. The crib should be built high and of course must be wide.

How to Clear a Choked Drain or Pipe.

J. L., Lapeer Co., Mich., describes a method of clearing an obstruction, such as sediment, sand, or mud, from a drain. A pipe of tin is made with an angular elbow at one end, and a water reservoir at the other, as shown in the illustration. The drain being opened at any convenient place, the tin pipe is fitted to it, the junction being plugged, to prevent any escape of the water used. The water being poured into the reservoir, the drain will be flushed, and the obstruction washed away by the force of the current. This method may be effective in some cases, but very frequently a drain is obstructed in such a way as to require some force to remove the sediment or obstructing matter. The plan above described would then exert too little pressure to be of use. Having had occasion recently to open an obstructed drain, we procured one of Whitman's "Fountain Pumps," described and illustrated in the *American Agriculturist* for May, 1877, as applicable to other uses, this use not being mentioned. We found it, however, very effective, a stream of water being forced from a barrel brought for the purpose, into the drain, clearing it completely in a very short time. The advantage of being able to procure a very considerable pressure, if needed, or to force a continued and rapid stream of water into the drain, is very obvious. Either of these may be done with the "Fountain Pump," better than with any other simple contrivance known to us. If mud or sand has become consolidated in the drain, the stream of water may be thrown into it with sufficient strength to break up the mass and wash it away. It is well to take the precaution, in using force to clear a drain, or a water pipe, to drive the obstruction back in the way in which it entered the pipe. Water-pipes, or waste-pipes in a dwelling, that have become obstructed, may be cleared very readily with this force-pump.


CLEARING DRAIN.

Planting Corn in Drills.—We are asked by a correspondent to name some farmers who have grown corn in rows or drills, instead of hills. The request is evidently made by one who doubts the value of this method of growing corn. That any person could doubt this, or confess not to know anything of so common a practice, even in the West, is a surprise. Corn grown in drills, and cultivated one way only, will yield one fourth more than an equally good crop grown in hills or check rows. The ground can be kept equally clean if the proper implements are properly used. No good farmer, who will keep his ground clean, should plant corn in check rows, and no farmer can afford now to plant by hand. This is a waste of valuable time, and a disregard of economy. In the East, drill planting is now almost universal, and is becoming very common in the West. A crop of 70 acres grown by a farmer in Kansas, who is personally known to us, and planted in drills 3 feet 8 inches apart, with seed dropped 8 inches apart in the row, yielded the past season over 5,000 bushels, which is far above the average of crops planted in checks.

A Good Jersey Cow.

On page 253 we give a picture of a Jersey cow, whose record certainly entitles her to the distinction of being represented in our gallery of portraits of noted animals. The cow, "Jersey Rosalee," Herd-Book, No. 1215, is owned by S. G. Livermore, of Cedar Rapids, Iowa, weighs about 700 pounds, and has the following very interesting record:

She dropped her first calf April 29th, 1870, at the age of 21 months and 4 days. In the first week of June she gave 23 pounds per day and made 7 ℔s. butter. In the first week of November she made one pound of butter from 15½ pounds of milk.

On June 3d, 1872, dropped her 3d calf, and from June 11th to 20th, inclusive, she gave 340½ ℔s. of milk, and made 20¾ ℔s. of butter. Total amount of milk from June 11th to August 31st, 2312 ℔s. Total amount of butter made from June 11th to to August 31st, inclusive, 136 ℔s. From December 16th to the 23d, 7 days, she gave 84 ℔s. of milk, with 14 ℔s. of cream, which made 8 ℔s. of butter.

In ten days in June, 1874, she gave 403 ℔s. of milk, from which was made 25 ℔s. and 3 oz. of butter; a yield of 1 ℔. of butter from 16 ℔s. of milk.

In ten days commencing June 11th, 1876, she gave 393 ℔s. of milk and made 21½ ℔s. of butter. Through the month of July she gave 964 ℔s. of milk. In August she gave 899 ℔s. of milk.

On the 23d of May last, she dropped a heifer calf, and her yield is now over 20 quarts a day. The measure of her udder is 48 inches around, and 16 inches deep. This cow furnishes another instance of the value of the Jerseys for the butter dairy, a business for which a few single cows of other breeds may equal them, but for which they are excelled by no other breed of cattle.

Repairing Roads.

The repairs of roads annually cost a very much larger amount than ought to be necessary. This is the effect of our imperfect and wasteful system, both of constructing and maintaining them. Instead of a substantial and permanent highway at the first, our system is to make a simple earth roadway, rounded up at the center, and ditched at the sides, which is immediately cut up into ruts, so as to be practically impassable half the year for a properly loaded wagon. This road is then repaired, generally at the worst season of the year, with the worst possible material, and in the most imperfect manner. The cost is, on the whole, equal to the proper maintenance of a first-class road, which would be passable for heavy loads at any season of the year. The best material for road-making, that is, stone, is abundant in every part of the country, excepting some of the rich prairie States, and even in many western localities, stone may be procured at a reasonable expense by quarrying it. The machinery for reducing stone of the hardest character to a proper condition for "road metal," is both cheap and of the most effective character. Blake's Stone Crusher has been alluded to and described in the *American Agriculturist* as a most valuable machine for this purpose, and we are pleased to see, in many localities, the excellent roads covered with broken stone, showing that our advice and recommendations have been effective. There is, however, ample room for more, and every township, at least, should possess a complete outfit of crusher and steam-engine for road purposes. No more economical investment could be made, nor one that would pay a more valuable return, in money saved and labor and time spared.

There is another aspect in which the road question may be viewed. In the country, there are a great number of men, idle either by choice or necessity, who have to be supported at the public expense or by private charity. Many of these demand work, and a greater number demand alms, and decline work. Promiscuous relief has become a most vicious practice, tending to demoralize a large portion of the community, and to encourage persons to live by begging and without work. In those countries where a considerable portion of the population are idle and impoverished, for whatever reason, public provision is made for setting those who wander from place to place, "vagrants" in name and in fact, to some useful employment, that they may earn a subsistence and relieve the community from a burden. To refuse to help a starving man, is more than the majority of good people can bring themselves to do, but to refuse, when remunerative labor is offered and rejected, is only just and proper. If work were provided for all beggars and tramps, there would be little hesitation in refusing to help those who refused to work, and in time the present "tramp nuisance," which is an onerous tax and a disagreeable burden to farmers, and a constant menace to farmers' wives, would be got rid of.

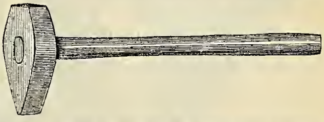


Fig. 1.—HEAVY HAMMER FOR BREAKING STONES.

The most appropriate work for this class of persons is repairing roads. This is the usual employment provided for them in European countries, and the scene depicted in the accompanying engraving is a very frequent one on the public roads there. Piles of stone, gathered from adjoining fields, are deposited here and there along the highways, and the stones are broken into fragments of proper size for making and repairing the roads. The illustration, fig. 3, next page, shows the manner in which the work is done, and the hammers used for breaking stone are given in figs. 1 and 2. This method might be introduced here in those places where it would not pay to use machinery for breaking the stone; and elsewhere, where machines are used, this sort of labor might be utilized in the repair of the roads. The work should by all means be done by the piece. That is, a pile of so many loads or yards of stone, may be given to break for a certain sum; and the piles may be made here and there, where the "metal" will be needed, and so that single individuals may be given separate jobs. Also, when the stone is crushed, it may be carted to the places needed, and spread at a given rate per yard for a regulated depth of covering. In this way, the work can be done without costly supervision, one road-master serving to overlook a long section of road, paying only for work that is actually performed, no service as task-master or "boss" being necessary.

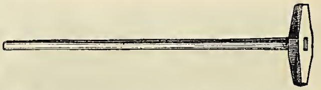


Fig. 2.—LIGHT HAMMER FOR BREAKING STONES.

In giving a few points to be observed in repairing roads, we refer only to the use of broken stone. For depressions, or worn places, the old surface should be broken up with the pick and left loose, so as to bind well with the new material. No stone should be used that will not pass easily through a ring 2 inches in diameter. The stone should be free from earth, and clean, and if possible the surface should be rolled. Nothing is needed to bind the stone; the angular corners will soon interlock, and make a very compact and solid bed. No road should be repaired until it is dry. The surface of a road should not be too much rounded, a rise of 6 inches in 16 feet is sufficient; when greater inclination is given, there is a tendency for loaded wagons to slip sideways and work the material off to the sides. It would be an excellent thing for all, the roads, the wagons, and the horses, if wagon wheels were make with a broader tread than is usual. A tire 4 inches in width is not only less destructive to the roads, but the draft of a cart or wagon is considerably less with such wheels than with narrower ones. The reason for this is, that as the broad wheels sink into the ground less, the traction is also less; when a wheel sinks into the ground, the draft is increased, as it has to overcome an elevation in front of it, or what is equivalent thereto. This may be proved by an attempt to move a loaded wheelbarrow on soft ground into which the wheel sinks.

Cider Making and Cider Presses.

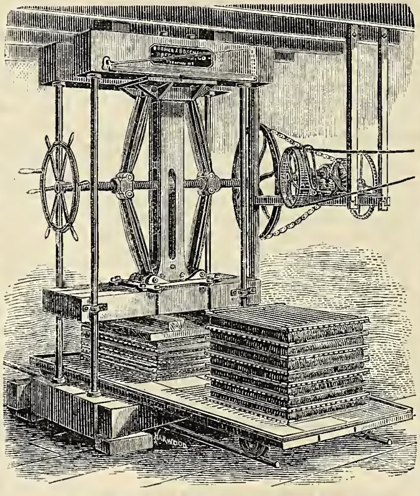
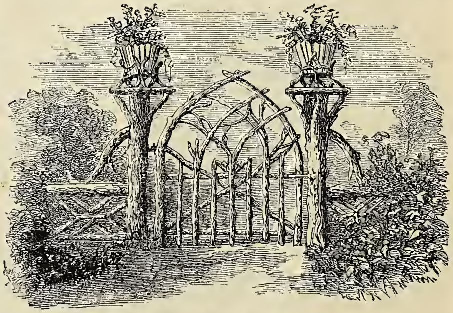

BOOMER & BOSCHERT'S POWER CIDER-PRESS.

Fig. 3.—BREAKING STONES FOR ROAD.—(*See p.* 259.)

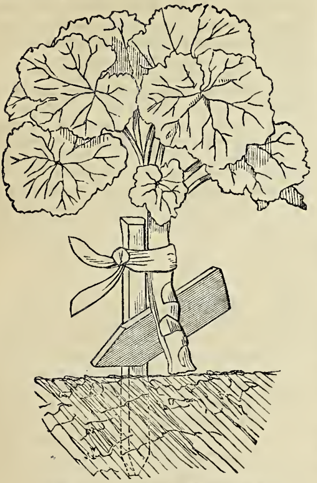
One October day during the Centennial Exhibition, as we approached the Agricultural Hall, we found men engaged in spreading large squares of cotton cloth that were of different shades of brown. Thinking these had something to do with experiments with dyeing materials, we made inquiry and found that they belonged to a cider press that was in operation within the building. It took but a few minutes to look up the press that used the cloths, which we found to be one made by the Boomer & Boschert Press Co., of Syracuse, N. Y., which was not in operation just then. There are some machines that are so simple, and so well adapted to their work that they tell their own story at a glance. This press was one of these; its construction showed such a combination of mechanical powers that any one at all familiar with machinery would see at once that the machine was a most effective one: that an apple that found itself under its influence would be separated into "juice" on the one hand and pomace on the other in the most complete manner and in the shortest possible time. The press, as we there saw it, was of the form shown in the engraving. Very unlike this to the old-fashioned cider-press, many of which in the older States can be seen in various stages of decay. There was a great deal of the picturesque about cider-making in the old way. If it did not require a great deal of help, there was an abundance of help at hand, for the boys made it the occasion of a holiday, and older boys did not despise sweet cider. The massive grinder and more massive press, with its enormous, rather rude and always noisy screw; the laying up the cheese with straw; the jokes about wetting the straw; the odor of the ripe fruit and the very different odor of the soured pomace, were all accompaniments, which those who have participated in such a scene, on a glorious October morning, will vividly recall, though many years have passed. The old press made cider, and good cider—if the apples were such—but very slowly. As we stood before this machine we saw that the poetry had departed from cider making, as here was something that meant business—a very matter of fact affair, with not a particle of sentiment—but an awful amount of squeeze—about it. The machine here illustrated is for steam or other power, but smaller ones constructed on the same principle, are made to work by hand. It will be seen that the press is essentially of that form known as a toggle press, in which the power is produced by straightening a kneed lever. This power was long ago used in the printing press, and is now seen in various modifications in cotton, hay, and other presses. In this cider press the toggle is worked by a screw, and the combined forces of two important mechanical powers, the screw and the lever, are brought into play. In the press here shown the screw, is turned by power, and in the smaller ones by a hand lever. The makers claim that this combination "moves quickly at first, when a small amount of power is needed, but increasing power and decreasing in motion as the substance becomes more and more dense, until at last, when the greatest pressure is required, we secure it in the most marked degree." The press is accompanied by a grater especially contrived to reduce the apples as fine as possible. Another peculiarity of this press is in the use of strong cotton cloth to hold the pulp in laying up the cheese, and in the use of racks to facilitate the flow of the expressed juice; these are shown in the engraving. To insure rapid working, a double platform is used, like that in the illustration; while one cheese is under pressure another is laid up, and by means of a crank and gearing, not here shown, the fresh cheese is brought under the press, as soon as the exhausted one is removed. The cheese is 4 ft. 8 in. square, and the portion in each cloth 4 inches thick; the rise of the follower is 3 ft. Working at an ordinary rate, it is arranged to run down in an hour, 20 to 25 minutes are allowed for drawing and changing the cheese; at this rate seven pressings can be made in 10 hours, with an average of 12 barrels to the pressing, or 70 to 80 bbls. a day is given as its capacity. At the Centennial Exhibition the press bore the placard, "Ordinary capacity, 60 Barrels in 10 hours," a claim which was so frequently criticised, that the makers proposed a trial and announced that on Oct. 26th, "100 bbls. of cider would be made on this Press from 800 bushels of Apples in 10 Hours." The trial was made on the appointed day, under the supervision of gentleman well known in the agricultural world. The result was, that 116 bbls. and 22 gallons were made from 871½ bush. of apples in 9 hours and 45 minutes. The names of persons residing in several different States, who have this press in use, show that it has been adopted by many of the leading cider and vinegar makers in the principal apple growing localities.

A Rustic Gate.

A farmer friend, who takes more than usual interest in horticulture, some time ago gave us a sketch of a rustic gate, constructed by one of his neighbors, and thought it deserving of publication. We have had the sketch engraved, but we fear it may not please our friend when he finds we have done so, if not for the purpose of showing others what *not to do*, at least to use it as a text for a few remarks on rustic work in general. There are places in which such a rustic gate may be appropriate, but it is not at the entrance to a farm, or at the approach to a large family residence or homestead. If a gate and gate-way are made conspicuous at all, then their expression should be that of permanence, and of dignity, neither of which are conveyed by the gate here shown. It if a great fault of much of the rustic work now made, in the minor articles of baskets, chairs, and seats, as well as in the more important structures of gates, pavilions, summer-houses, etc., that they not only do not look permanent, but are really slightly put together and frail. This remark does not apply to all rustic work, as some of the regular builders are very thorough in this respect, but in the work of amateurs, and in some of that found in the market, more thought appears to be given to the ingenious fitting of crooked sticks, than to the enduring character of the structure. There is scarcely anything about a place that gives more trouble by getting out of order, than a much used entrance-gate. Even when built with all the care that can be given to straight timber, and braced and bolted in the most approved manner, it often calls for repairs to the gate or gate-way. When it comes to the irregular forms used in rustic work, the difficulty of making a durable job greatly increases, and we have not seen a gate of this kind that did not soon become a nuisance. If one feels that he must build a rustic gate, then let it be put together in every part with bolts, and extra care be taken in the bracing, even to some sacrifice of "rusticity." Nor do we consider the flower-vases upon the posts as an example to be copied. In our climate plants in vases must be watered; here they are too inaccessible for convenient watering, and if at a distance from the house, the plants will be very likely to present, in August, an appearance very far from ornamental. While for a summer cottage, or some such locality, a rustic gate may be in keeping with the surroundings, we cannot advise any one to place it at the entrance to a permanent home. In well ordered communities, where cattle are not permitted to run at large, no gate at all, or one always open, is usually the rule, and a rustic affair only looks well when shut.


A RUSTIC ENTRANCE GATE.

Something About Alpine Flowers.



A GERANIUM CUTTING.—(*See page* 263.)

There are several works, English and French, devoted to Alpine Flowers, while a number of nurserymen in Europe, and a few in this country, have lists of plants classed as Alpine. That some of our cultivators are interested in the subject is shown by letters asking "what are Alpine Flowers?"—A very brief answer to these would be—"flowers of the Alps, or of those mountains sufficiently elevated to be classed as alpine." This definition would not quite meet the case, for if one looks into the catalogues of Alpine Flowers, in some of the elaborate European works on these plants, he will find those that do not grow on high mountains at all, or if they do, are found much more abundantly not far from the sea-level; such, for example, as the common and beautiful Bluets, figured last month, and the curious Lady's Slippers—or Cypripediums, referred to and illustrated in Doctor Gray's article in the same number. In a geographical classification of plants, there are certain species found only at high elevations, near the limits of perpetual snow; these plants, which in the Alpine regions of Europe are found at an average elevation of about 600 feet, are properly called Alpine. The elevation at which these or their relatives and representatives will be found, as we go South, will vary greatly, and the parts of the Andes and the Himalayas, occupied by a similar vegetation, will be some 12 to 15,000 feet. Then, as we go northward, we find that the same or similar plants are found on low mountains, or what we should call hills, and when we approach the Arctic limit of plant life, the general vegetation at the sea-level is in part the same as, or composed of plants closely related to, those found on the European Alps. But in our horticultural grouping, (it can hardly be called classification), of plants, we do not follow that of geographical botany. In the catalogues of cultivators and the books on cultivation of Alpine plants, all are included that bear a general resemblance in manner of growth and habit to the plants that are geographically Alpine. Then to get at the meaning of the term Alpine, as horticulturally applied, we must know what are the peculiar characteristics of the plants found in the proper Alpine regions.

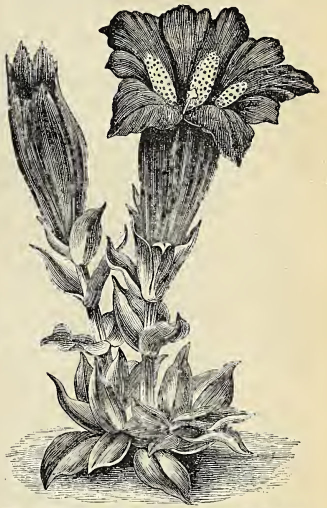


Fig. 1.—STEMLESS GENTIAN.—(*Gentiana acaulis.*)

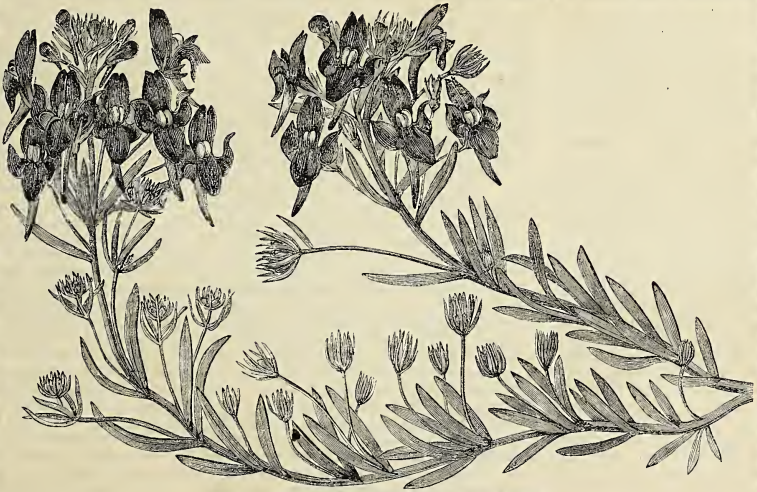


Fig. 2.—THE ALPINE TOAD-FLAX.—(*Linaria alpina.*)

Botanical description will not avail here, as the Alpine plants are, mostly, of the same genera with those which grow at lower altitudes, and it must be some common features of habit and growth, which, adapting them to a life in a peculiar locality, makes them different from other plants and mark them as distinctively Alpine. The most concise and sensible characterization of these plants that we have met with, is that given by Verlot of the *Jardin des Plantes*, in his "*Les Plantes Alpines*," a most elaborate and beautifully illustrated work, and one which has been largely used, though seldom *quoted* from, by various English writers on these plants. M. Verlot says that the "distinctive characters of Alpine plants may be summed up as follows: *Their Roots* are deeply implanted in the soil, mostly very branching, and in most cases, greatly exceeding in length, the stems of the plants to which they supply nourishment. *The Stems* are very short, even in the woody species, and in these they are often bent and rooting. *The Leaves* are usually reduced to the smallest size, rarely smooth, sometimes odorous, more or less hairy or rough, and with a disposition to grow in the form of a rosette, and finally: *The Flowers* are often sessile, (short stemmed or no stems), of varied or uniform colors, which are always very lively." Such being the characters of the true Alpine plants, in cultivation we add to them other, but low-land, plants which resemble them in these particulars, and a garden collection of Alpines will include a variety of low growing, small leaved plants of compact form, with large and showy flowers, or, if the individual flowers are not large, a great profusion of smaller flowers. The question will occur to the amateur, can we cultivate in our gardens these interesting plants, which mostly belong to elevated localities? So far as the climate of England is concerned, the answer would be—yes; but in this country more unfavorable than England, by as much as that country is more unfavorable than the Alps, the answer must be modified. We will say that with proper care, a large share of the Alpine plants—a much larger than one would at first suppose—may be cultivated even in our unforbidding climate of the Atlantic States, in part upon specially built rock-work, and in part in the open border. Leaving for another article the question of rock-work, we will consider

Alpine Plants in the Open Border.

It has often been stated in these columns that many plants usually regarded as tender, could, with proper care, be made to survive our winters. So with Alpine plants; many of those which naturally grow only in elevated regions, or in conditions unlike those of our gardens may be made, not only to live, but to grow in the open border. Verlot, quoted above, states that one of the characters of Alpine plants is, to have deep-growing much branched roots, often exceeding in length the above-ground portion of the plant. It is upon the observance of this character that much of our success with Alpine plants will depend. Every care must be taken with the roots. As we do not propose, at the present time, to write a treatise upon Alpine plants, we will merely confine ourselves to this point. To have success with these plants, however they may be obtained, from their native localities, from the collections of nurserymen, or from seeds, (seeds sown in pots being an excellent method), the chief care must be for the roots. It is not our hot suns upon the foliage that kills Alpine plants, for in their native localities they have for a while, at least long enough to kill the leaves, a very intense sun, but all the while their abundant roots are far down beyond the reach of this influence. Therefore, those who would grow Alpine plants in the border, must provide, firstly, a deep soil, and secondly, a mulch to prevent evaporation. A bit of practice will give a useful lesson in such cases. Several years ago one of our associates went on one of those, so-called, editorial excursions to Colorado and Utah, (the real object of which was to extend the advertising business of a, so-called, religious journal.) Our friend, when practicable, sent us home by mail, all the plants, especially Alpine ones that the rapid movement of the menagerie allowed him to collect. These plants—mostly roots, with their leaves removed, were placed in a shady place, in common soil, and the surface well covered with *small stones!* The stones were in bulk from that of a hazel nut, up to that of a hen's egg, but being from a shaly locality, were flattened rather than round in shape. Care was taken in placing the stones around the crowns of the plants, and the general surface covered two inches deep. As a consequence, nearly every plant lived, though some that could only be at home on the margins of streams of ice-water, failed to last, yet the general success was most gratifying. We would suggest this plan of mulching with stones to all who set out Alpine plants, or any others, in which the fibrous roots are large in proportion to the rest of the plant; it more nearly comports with the natural localities of Alpines, and for others it is better than any other form of mulch. As an illustration of the success of an Alpine plant under adverse circumstances, we may mention our own with the Stemless Gentian, *Gentiana acaulis.* This plant, (fig. 1.), is a native of the Alps, where its low herbage often forms patches of wide extent, and in the blooming season is hidden by flowers very large in proportion to the size of the plant, so large that they often hide the plant, and of a blue so beautiful that no description will give a proper idea of the color. A few years ago, in ordering some plants from an European nurseryman, we added a half dozen of *Gentiana acaulis*, as that was in his catalogue. We supposed that by potting and shading, we might chance to get it to flower, at least for once. When the plants came, our Stemless Gentian, which had been put in as good-sized clumps, appeared in a most unpromising condition. The leaves were yellow, and there was a general failure apparent everywhere. We had the plants put in a reserve bed, and thought no more about them. Some two years after, it was reported that *Gentiana acaulis*, was about to bloom, and we found that two or three of our dead-looking sods had lived and recovered, and each was a small mat of pleasing foliage, with several of the large, inexpressibly beautiful, blue flowers about to bloom. Here was an Alpine plant that, out of mere disgust, was put in a soil in which one would hesitate to plant a respectable tomato, establishing itself in spite of adverse circumstances. For many Alpine plants, the best way for the amateur, if he cannot afford to purchase plants outright, is to raise them from seeds. Most of the seed catalogues offer several kinds, and others may be readily procured from Europe. The seeds are to be sown in pots, covered thinly, kept in a moderate heat, and when the plants are large enough, they are pricked off, four or more in a pot, according to size, and they can then be transferred to the open ground without disturbance of the root; even in the case of plants from the seeds, we should prefer to put around them a mulch of stones. In a recent visit to the grounds of Woolson & Co., Passaic, N. J., we saw a number of instances in which plants regarded as peculiarly Alpine, as well as a host of others, not classed as Alpine, but treated the same, had been raised from seed. A row of Alpine Toad-flax, *Linaria Alpina*, (fig. 2.), was especially showy. This is a truly Alpine plant, which, on the high elevations of the Alps and Pyrenees, attracts the tourist by its bright little tufts, not more than an inch high, was as much at home as if it had never known of any ground more elevated than that of W. & Co.'s garden. As grown there—the seeds having been sown under glass, and the young plants put out in the spring of 1876—it made a most beautiful show. The plant itself was attractive for its silvery-tufted foliage, and the very numerous flower-stems were clothed with violet-colored flowers, of the form shown in the engraving, each with a center or "eye" of the brightest orange. We learn that these plants passed the winter perfectly well under the ample cover of snow, which came before the intended mulch could be given them. These examples show that some, at least, of the Alpine plants, may be enjoyed in the ordinary garden border. To the zealous amateur, the few obstacles to the culture of these plants, will only serve to stimulate him to endeavor to overcome them; we cannot have *all* the truly Alpine plants in our borders, or even on our rock-work, but we can, by a little painstaking, cultivate a good share of them even in localities very unlike the high elevations in which they form the whole vegetation.

The Colorado Spruces.

BY PROF. C. S. SARGENT, DIRECTOR OF THE ARNOLD ARBORETUM, OF HARVARD UNIVERSITY.

The three Spruces of the Rocky Mountains, Douglas's, Menzies', and Engelmann's, botanically known as *Abies Douglasii, A. Menziesii,* and *A. Englemanni,* seem destined to take such an important position as ornamental trees in the northern portions of the United States and Europe, that some account of them at the present time will be interesting, and will, I hope, help to make them better known to nurserymen and planters generally. *Abies Douglasii* and *A. Menziesii* have been in cultivation for half a century, having been introduced into England from seed collected in California and Oregon, by David Douglas, a celebrated Scotch botanical traveler, whose labors and untimely death in the pursuit of his profession, the Douglas Spruce will always recall to botanists and lovers of coniferous trees. Although these two trees grew well, and soon became popular in England, all efforts to introduce them into our extreme Northern States failed, or practically failed, as after a few years, more or less, some unusually severe winter had killed all that had been planted, and it seemed settled that our plantations must be made without reference to these really fine trees. But in 1862 Dr. C. C. Parry, to whose indefatigable journeyings and researches are due the solution of so many of the botanical problems of the Western Territories, visited the Rocky Mountains of Colorado, and sent from there seeds of these two trees to the Botanic Garden of Harvard University. From this seed a large number of plants were raised, which, with a view of testing their hardiness, have been widely distributed through several of the Northern States, where they have stood the trial of the last dozen years, and many of them, too, very trying years to plant-life, without, so far as I have heard, a single one, whether planted on the most exposed situations of the New England coast, or in heavy clay soils in Pennsylvania, having been injured in the slightest degree. As a plant is generally more susceptible to injury from cold or drouth during the early years of its life, and as our plants have passed through these first years so successfully, their perfect hardiness and adaptability to the soil and climate of the Eastern States must, I think, now be conceded.

But why, it will be asked, are these Colorado trees hardy, when the same species had, up to a dozen years ago, proved so unsuited to our climate? The reason for this apparent anomaly is obvious, if we take into consideration the fact that individuals of the same species vary to a remarkable degree in their power to adapt themselves to various conditions of temperature, and that the power of an invividual to withstand cold, increases in proportion to the distance at which its seed-bearing parent is situated, either from the Equator, or above the sea-level. Or, in other words, our two Spruces are perfectly hardy in New England, the seeds from which they were raised having been collected at an elevation of some 8,000 feet, while plants of the same species, raised from seed collected at comparatively low elevations near the Pacific coast, have almost without exception, proved too tender for this climate. The Douglas Spruce, which botanically is closely allied to the Hemlock of the Eastern States, and which, though coarser and less graceful, it somewhat resembles, extends through California and Oregon, as far north as Sitka, and in the Rocky Mountains from New Mexico northward, growing to an enormous size on the Pacific coast, where, in favorable situations, it often attains a height of from 200 to 300 feet, with a diameter of trunk of from 10 to 15 feet. In the Rocky Mountains, however, its average height is hardly above 80 feet, and its growth there is slower and less productive of valuable timber. But it is as an ornamental, and not as a timber tree, that we are now considering this species. As such, few coniferous trees surpass or even equal it, for it has thus far retained in cultivation (and some of the first trees planted in England are now over 100 feet high), its lower branches, and close, dense pyramidal habit; and in this it contrasts most favorably with such trees as the Norway Spruce and many of the Spruces and Silver Firs of the old and new world, which, however beautiful and thrifty in their young state, become either naked and unsightly skeletons, or destitute of lower branches, long before they have reached half their full development. For this reason, the Douglas Spruce should be selected in preference to any other tree of which, in cultivation, I have any adequate knowledge, where it is desirable to plant a tree of pyramidal habit, which not only is beautiful in its young state, but which will improve for generations.

The second of our species, *Abies Menziesii*, in favorable situations, attains a hight of 100 feet, and has nearly the same geographical range in North America as *Abies Douglasii.* It also, under various names, extends through Kamtchatka and the Amoor country, to Japan. In the Rocky Mountains, this tree is found at an elevation of from 6,000 to 9,000 feet, and never forming extensive forests, as do many coniferous trees, but scattered widely here and there, and always in low, wet situations, generally along streams at the water's edge, where its roots are constantly kept cool and moist by the mountain torrents. This natural selection of a cool, moist soil, indicates under what conditions this tree can be most successfully cultivated. According to Dr. Parry, *Abies Menziesii* is, in the Rocky Mountains, a tree of rather an oval outline, pointing upwards with a rapidly tapering trunk. It has a thick, gray, rough bark, and its leaves are remarkably broad, stout, and very sharp pointed; indeed, so harsh are they that it is painful to grasp one of the branchlets with the naked hand, and by this peculiarity the species can be most readily distinguished while young, from several other Spruces which, in their early years, have certain points of resemblance.

The young plants, although of rapid growth, are remarkably compact and beautiful, especially those of them (about 20 per cent in our seedlings), which are of a bright, bluish-gray tint. In fact, these young "Blue Spruces," as cultivators are beginning to call them, are the most beautiful and valuable hardy conifers for this climate I know. Still, it is only in its *young state*, probably, that this species will make a desirable ornamental tree, as it has been observed that, when growing naturally, the bluish tint disappears from trees over 30 feet high, while, long before its full development is reached, loose, unsightly branches, nearly destitute of foliage, take the place of its early compact habit. This comparatively early fading of beauty is less objectionable, perhaps, in an ornamental tree in this country, than in almost any other, and is quite compensated for, in this case, by the superlative beauty which graces its early years. As a hedge plant for this climate, *Abies Menziesii* presents qualities possessed by no other plant, and when it becomes, as it should before long, as common and cheap in our nurseries as the Norway Spruce, it will be used for this purpose in preference to that, or any other evergreen.

Abies Englemanni, the third of the Colorado Spruces, is the most alpine in character, forming in the southern Rocky Mountains vast forests above 8,000, and reaching even 11,500 feet above the sea-level. This tree forms a shapely, tapering spire, from 60 to 80 feet high, with a trunk slender for its hight, and which is covered with a thin, scaly, reddish-gray bark. In general appearance *A. Englemanni* resembles the Black Spruce of Eastern America, for which it was mistaken by all botanical travelers in the Rocky Mountains, until Dr. Parry detected its specific distinctions, and dedicated it to the distinguished botanist, whose name it bears. Of its merits as an ornamental tree, I can not as yet speak with so much confidence as of the two trees already mentioned, as material for a satisfactory trial has not been available. But, probably, its resemblance to one of the common trees of the East will work against its general popularity, while its alpine character, and consequent habit of starting to grow in very early spring, will render it unfit for cultivation, save in the extreme Northern States. In St. Petersburg, as I am informed on the best authority, *Abies Englemanni* succeeds perfectly, in spite of the extreme cold of the Russian winters, and as heretofore the only conifers available for planting in northern Russia, have been the Scotch Pine and the Siberian Spruce, its general introduction there is considered of the greatest value and importance. By far the most valuable of the Colorado Spruces, as a timber tree, and the equal in this respect to the Black Spruce, it is not improbable that Englemann's Spruce will some day form an important element in the formation of artificial forests in Northern Europe.

Notes from the Pines.

If you who sit at Editorial and Publishers' desks at 245 Broadway, would see "a sight to behold," make an excursion to "The Pines," and I will show you a "thing of beauty," which, if you love trees as I do, shall also be to you a "joy for ever"—at least so shall be the memory of it. What a pity it is that people who have a place in which to plant trees—often people of abundant means, do not appear to know how many

Beautiful and Hardy Trees

there are besides the Maples, the Elms, the Horse-chestnuts, and a few other things that every one plants. I do not know whether the nurserymen are to be blamed for not telling tree-planters of these trees, or if those intending to plant insist on having just such trees as are in their neighbor's grounds. Be the fault where it may, the fact is painfully evident to those who go much about the country, that there is a wonderful sameness in the tree-planting. With a few rare exceptions, one place is like another in the kinds of trees, not but what the kinds are good enough in themselves, but one does not want *toujours perdrix*, even if partridge is good eating. How rarely do we see a good specimen of that finest of trees, the American White Ash!—How seldom that most picturesque of all, the Weeping Beech, or that embodiment of lightness and grace, the Cut-leaved Weeping Birch! Still more rare than either of these, is the prime favorite I have asked you to come and see,

The Yellow-wood, or Virgilia,

as most of the catalogues have it. Michaux referred it to *Virgilia*, a South-African genus, but Rafinesque, finding that it differed from that in important particulars, gave it the name of *Cladrastis*, which, though no one knows what it means, exactly, is the accepted botanical name. Come and see my tree, and you will not care whether I call it by its proper botanical name, *Cladrastis tinctoria*, or by the incorrect one, still kept in the catalogues—*Virgilia lutea*. You will say that there can be nothing handsomer in the way of a tree, and that by "any other name" it would be as fine, and when in flower would "smell as sweet."—"Beautiful," you will say, and "why do not others plant it?"—you will ask, and I cannot answer you. I have hammered away at this and a few other trees, and tried to popularize them these many years, and expect to keep on doing so (if life is spared) for many years to come. The leading nurserymen will tell you that they keep the trees, but people will not buy them; they will sell 1,000 Maples, while 50 Virgilias get overgrown and must go to the burn heaps. A few years ago I was at a gentlemen's place, and was asked if I would take some Virgilias. His large tree fruited abundantly several years ago, he sowed the seed, and had young trees 3 or 5 feet high, by hundreds. He couldn't give them away, because people didn't know them; he wanted the land, and the whole lot are now ashes. Look at that tree, and think of burning it! What a fine-rounded head, what clean ample foliage of a most satisfying green, as you see it between the fringe of flowers! the flowers too, slender, graceful clusters, of a white as pure as the snow, and the fragrance just that which makes you wish for more, and never cloying! I know of but just one fault the tree has: if you set it out in the morning, it will not bloom that same afternoon. In other words, it is a rather slow grower while young, and takes time to get established. Mine is now (I think) eight years from the nursery; it has given a few flowers for the past two years, but this is its first year of real fullness. It is full, and worth waiting for twice eight years! The impatience of our people is amusing; if told that a tree is to flower, flower it must, then, there, and abundantly, or they will not wait, but take something that bears no flowers (at least no showy ones) at all. It is rather discouraging, but I shall continue to speak of this and other trees, as well as such humbler plants, as I find commendable, feeling sure that even the hardest stone will be worn by the constant dripping....One who would keep the run of any special branch, must have all the leading journals and books devoted to it. In trying to keep myself "posted" in European horticulture, I have ordered numerous works, as bills are read in Congress, "by their titles." I have somewhere stated that I never found a work on horticulture so abjectly poor, that I did not find in it somewhere, a hint or an idea that was worth all the volume cost. I fear that a late importation will induce me to revise this opinion. I ordered, by the advertisement, several new horticultural works, the most showy and pretentious of which was

"The New Practical Window Gardener,"

By John R. Mollison. This, a small 12mo. of 204 pages, contains about half a dozen full page colored illustrations, the most *chromatic* of chromo-lithographs, of the most impossible of window gardens. One might imagine such—indeed it has been done here, but mortal eye never beheld anything of the kind. The rest of the work is crowded with wood cuts, and reminded me of a work published a few years ago in this country, in which almost every engraving from journals and dealer's catalogues was pressed into the service and the text written in job lots to match. The English journals, usually so lenient with their own writers, describe the matter as "sound, but not new."—I know of no better word to describe it than "Humbug."....Another work in the same lot called "The Children's Garden," contained 166 pages, of which 40 (*Forty!*) were advertisements of other works by the same publisher. This may be all fair, right and honest, but to make one buy a book of which almost one-fourth of the pages is the seller's advertisement, is rather tough....By far the most important of recent works on horticulture is

"Cultivated Plants, Their Propagation and Improvement,"

By F. W. Burbidge. It is a large 12mo. of over 600 pages. I had known of Mr. B. as an occasional writer for the English Horticultural Journals, and as the author of a not very remarkable work called "Domestic Floriculture." This later work on Propagation received such high praise from the English journals, that I awaited the arrival of our copy with no little impatience. Over 160 pages are devoted to Hybridizing and Crossing, and it is but fair to say that this is the portion of the work that has been specially commended abroad, as bringing together the latest views on this important subject. The rest of the book takes up—or proposes to take up, the cultivated plants by families, but the most important plants in many of the families are unnoticed. I shall be surprised to learn that this is a fair exposition of the present state of knowledge and practice among English propagators. None of the rapid methods and peculiar expedients to meet particular cases, so common among our florists and nurserymen, seem to be known to the author. Of course the work contains much that is useful, and is more satisfactory than Carrières "*Jardinier Multiplicateur*," but it will fall far short of telling the amateur all that he wishes to know, and there is yet room for a comprehensive and practical work on propagation, suited to this country, where the conditions are so different from those abroad. In the mean time, until the desired work comes to his aid, let the amateur remember that

Every Plant can be Multiplied Somehow,

and that patient and intelligent experiment will at last find out the secret. Some plants can only be propagated from seeds, others, of which the cuttings of the stems root with difficulty, or not at all, grow readily from pieces of the root. The difference of a few days in the ripeness of the stems used for cuttings, (or grafts), will lead to success or failure. Sometimes the only way in which a plant can be managed, is to graft a portion of the stem upon a piece of its own root. These examples are sufficient to show that there is no regular routine to be followed, but that to be a successful propagator, requires no little ingenuity and skill. As an example of the expedients to which ingenious gardeners resort, the bedding geraniums may be cited. These, when set in the open ground, make a great growth after the severe heats are over, and afford an abundance of cuttings, but these, having grown rapidly, are very succulent, and if put into the cutting bench in the ordinary way, would decay before they rooted. To overcome this, and prepare the cutting, Mr. Peter Henderson hit upon a plan that worked capitally; instead of taking the cutting off at once, he cut the shoot half through, or tongued it. This checked the further growth of the shoot, caused the wood to harden, and a callus to form at the cut surface; in a few days the cuttings were ready, and when treated in the usual manner, formed roots at once. This little discovery was worth hundreds of dollars to Mr. Henderson, but instead of keeping it to himself, he, like the progressive horticulturist that he is, gave at the time a full account of it, illustrated by an engraving, in the *American Agriculturist*. The same trick may be played upon other soft-wooded plants as well. I have used successfully another method with geraniums and similar cuttings, which I saw in some journal, but have forgotten where or I would give credit. When the wood is very succulent, and there is danger of decay, the cutting is tied to a stick, and this is put into the sand so that the base of the cutting barely touches it. To prevent a close contact between the cutting and the stick, where moisture might remain and cause decay, a peg is placed between the two. The arrangement is shown in the accompanying rough sketch, [See engraving on p. 261]. Of course this can only be successful in the moist atmosphere of a propagating house....Probably almost every one has seen the old way of propagating the Oleander by

Rooting Slips in a Bottle of Water;

a cutting six inches or more long, has its lower leaves removed, and that portion immersed in a vial of water, which is hung up in a warm place, and the water replaced as it evaporates. In a shorter or longer time, according to the condition of the cutting, roots will form in abundance. It is well known that this is the readiest method for multiplying the Reed, (*Arundo Donax*); and other plants may be treated in the same manner; Roses, Grapevines, Willows, etc., will root in water, and it is said that cuttings of the Tamarisks strike more readily in it than in the usual way. The method seems to be attracting some attention among French horticulturists, and I was quite surprised to see a correspondent in a recent *Revue Horticole*, advise it for Begonias, the cuttings of which are so succulent that one would think they would decay quickly. Experiments of this kind are very interesting to the amateur; of a similar character is what is called "saucer propagation," very popular a few years ago, in which cuttings were placed in a saucer of sand which was kept very wet—thin mud—and set in full sun light. Cuttings root readily so treated. But there is one difficulty with cuttings struck in water or very wet sand; the roots are succulent and tender, and unless handled with great care will be lost when potted and in contact with the soil.

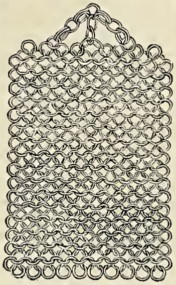
Though these methods seem very attractive from the ease with which roots seemed to be formed, the extra care they require afterwards more than offsets any advantages. Some cuttings root very readily in wet sphagnum; indeed any inert medium that will hold the proper amount of moisture may be used, and pure sand has been found the best.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

An Iron Pot Scrubber.

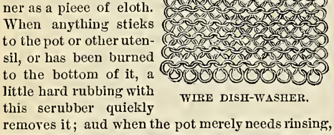
The cleaning of pots and pans is a work that housekeepers would gladly avoid if they could. Pots must be cleaned, however, and to save the finger nails, chips, spoons, knives, and other substitutes are used. In some parts of the country, a pot-scrubber made of iron rings, as shown in the illustration, is used, but it is by no means so well known as it ought to be, as it serves a most excellent purpose. It is shown as it appears when spread out; but when taken in the hand may be gathered up, in the same manner as a piece of cloth. When anything sticks to the pot or other utensil, or has been burned to the bottom of it, a little hard rubbing with this scrubber quickly removes it; and when the pot merely needs rinsing, the scrubber may be loosely rubbed around a few times. We do not know who the manufacturer is, but as the scrubber is kept for sale at some of the hardware stores in the city of New York it can be procured by any retailer of hardware or house furnishing goods throughout the country, if it is only inquired for. Its cost is 25 cents.



WIRE DISH-WASHER.

A Home-made Toasting Fork.

A fork that will hold bread, cakes, muffins, or even chops, steaks and slices of bacon, that are to be toasted, before a fire, may be made of any refuse piece of tin, as the bottom of a sardine box, or the side of a fruit can. A piece of tin of convenient size, 6 to 8 inches long, and 3 to 4 inches wide, for instance, is flattened out; the corners are cut off, and the edges are turned up as shown in the engraving; this is done to make the tin stiffer, so that it will hold its shape. Three angular pieces are then cut, and bent up as shown; and three wires are fastened into holes, and then twisted to form a handle by which it is held. It is best that the three points should be turned up a little so that whatever is placed upon them may not slip off easily. This is a little useful thing for the boys to exercise their ingenuity upon, as it can all be made with a jack knife and a sharp pointed nail with which to punch the three holes for the wires of the handle.



HOME-MADE TOASTING FORK.

Home Topics.

BY FAITH ROCHESTER.

Tending Baby.

Now here is Grace with her first baby; and somehow she has to "tend" it a great deal. Don't you believe that she "has to"? But the baby worries if he is not taken up when he feels like it, and if he is neglected long, the worrying usually turns into hard crying. "What of that?"—Oh dear! If you have not been "through the mill," either as mother or as sympathizing friend, please don't speak in this meeting. We don't care to hear about Indian babies, strapped to a board for hours at a time, sucking a bit of sour bread or raw meat. Our children do not inherit the fortitude of the Indian character, nor the robustness of the Indian constitution, and no single-handed efforts will bring individuals of the Anglo-Saxon race to an equality with American Indians in these respects.

Grace is a woman of good sense, tender in heart and in judgment. She wants to do the right thing by that baby. Friends advise her not to tend the baby too much—teach him to take care of himself, as far as possible, and Grace herself resolves to do this. But if the baby, after his short nap (for he does the bulk of his sleeping at night), and a little season of quiet and happy open-eyed meditation, announces in baby language that he would like to sit up now—why, isn't it fair that somebody's loving arms should support the frame whose bones have not yet grown strong enough to support it? Human beings were not made for a steady horizontal position, and young babies have a right to lie up over their mothers' shoulders, and look at the world as others see it, and to find how it seems to sit up, safely supported by a loving arm and breast.

But, presently, the baby worries again, and it is not hungry and has no other apparent cause of complaint. It continues to complain, making every body in its vicinity more or less uncomfortable. Since the baby cannot explain its troubles, and since there are in human experience almost infinite sources of discomfort, it is quite fair to try to discover what ails the baby, and so relieve it.

I have tried to give baby's side of the subject. But now, how shall parents protect themselves against infant tyranny?—How can the little ones be early taught to know their place and not encroach needlessly upon the rights of others?—If I could, I would inquire of the mother of John Wesley, who is noted for this, among other things, that she never allowed a child over four months old to cry aloud. How *did* she manage it? And she had—was it eleven children? or was it fourteen? I am unable to believe the story about her babes not crying aloud.

Well, mine do; and so do yours. Some babies can be turned off more than others. Perhaps they are less social, perhaps less selfish and exacting—these babies who take everything good-naturedly. Perhaps they are simply healthier. There are little children who, by the time they can talk, seem to have gained a complete mastery of their parents, and the only way to have peace—a wretched peace indeed!—is to let them have their way in everything. This is a most deplorable state of things, but it is not always the result of parental imbecility. Sensible people sometimes find themselves the natural guardians of babes with so nervous temperaments, and so mountainous wills, that it seems extremely difficult to establish proper government.

No very definite advice can be given to meet such cases. A baby's rights must be respected. The helpless little creature has a right to smiles and tender words, and help about its exercise and self-education. But it ought to learn some self-reliance. Sooner or later it must submit to have its wishes crossed. We find how much easier it is for a baby to lie in its crib, or sit on the floor, or in a high chair, and amuse itself when it sees other persons busy at work. It does not seem to understand that sewing, or other sedentary employments, are necessary occupations for mamma, if she is much engaged with house-work. While she is going about the house with broom, or dish cloth, or ladle, baby employs and amuses itself as best it can, but when the work is done up, and mamma sits down to sew—now is baby's chance! And why not? But the sewing must be done! Alas yes. I wish mamma could take the baby out in the garden, and not know of a single thing that she ought to be doing, except to have a good time with baby for two or three hours every day.

It is painful to see how persistently many people educate self-consciousness in little children. They give such over-doses of pity for all its little woes! Better to cheer it than to pity it, when it mourns. Indifference to its real troubles is cruel and unlikely to educate the tender Christian graces in a child, but I am sure that the unconscious motive of the "poor baby,"—"did they 'buse it?"—"well, they shouldn't!" soothing doses, is to make the baby delight in feeling its importance in the circle, and take a natural, but not ennobling pleasure, in exciting the compassion of others. Kiss the bruised portion; rub the aching spot; let the little one feel that you love it and wish to do it good; but try to interest it in something *outside of itself*. I confess I hardly expect to see a single American child brought up after this plan in my day and generation, but this has long been my theory. If one parent pursues the sensible course, perhaps the child's other parent, or some grandparent, or aunt, exclaims pityingly at every fall.

It is poor policy to teach a child to be almost always in motion, trotting, rocking, jumping, rolling in a carriage, or carried about in some one's arms. When the wee bit baby grows uneasy, see whether a simple change of position will not answer as well as rocking it. Some babies will not sleep at all, night or day, unless rocked. Some babies must have also a regular *din* set up to drown out their cries and stupify them with astonishment, until they sleep. I even knew of one who required not only a din, but a real dinner—bell! At last it could not be got to sleep without having a big dinner-bell rung above its head. Remember this, when you begin the practice of putting the baby to sleep with instrumental music, or any noise, except soothing lullabys. Perhaps it *is*, as many say, the best way to teach babies, from the outset, to go to sleep alone in their little cribs, without any attention except putting them there, but I frankly confess that I should not like to have missed the pleasure of sometimes rocking my babes to sleep in my arms, to lullaby singing of my own heart's making. "It takes time," they say. Dear! Dear! What do women want time for, if not for the sweetest of womanly pleasures? Because I believe in a good God, I am very sure that in some good time coming all mothers and babies will yet have a fair chance and a good time in this world. Until then, women and babies must simply do the best they can.

Letting Babies Cry.

The foregoing topic is unreasonably long, I know, and yet I did not speak of one important consideration in tending a baby. I have been asked whether I did not believe that babes would soon cease to cry, unless in pain, if their calls were usually disregarded. Very likely they would, but how are you to know whether an infant is is pain or not? It would be simply cruel to leave it to suffer unhelped if it were enduring pain, or only discomfort, which you could relieve. Even if you suspect that its cries result from temper alone, you can not be sure of it, if the child can not talk; a severe paroxysm of crying may result in long and anxious parental inquiry and experimenting with infant trusses of one kind or another, together with the necessity of using almost any means, rather than to allow the injured child to cry hard again. All this is matter of quite common experience, in the world as we find it, as they should know who talk dogmatically about letting little babies "cry it out and learn once for all who is master."

In a very interesting Autobiography, published a few years ago, we are told how the author's mother, by his father's advice, let him sit upon the floor, a babe of six months, and scream out his rage over necessary denials of his wishes, time after time, until he was cured of such folly. Perhaps if only rage possessed the child, it would not be likely to scream until serious physical injury would result; but I should like to ask that man's mother some questions prompted by scientific curiosity and philanthropic desire. If no immediate strain or rupture followed such paroxysms as the child indulged in, I think there may *possibly* have been some connection between them (in their effect upon the nervous system), and serious nervous prostration which followed an attack of measles some years later. Questions like this must occasion anxious thought to parents who have nervous children. There is, on the one hand, the danger of physical injury from excessive excitement; and a danger equally great on the other hand—the cultivation of willfulness, obstinacy, tyranny of disposition, by allowing a child to have its own way contrary to the parents' judgment, for the sake of temporary peace. Whether "Dr. Spanxter" should be summoned, wise parents must decide for themselves. Like most other doctors, (except one!), he is in danger of coming too often if you call him at all. Still, there are emergencies when he does seem absolutely necessary. One child of mine led me many an hour of weary effort to "pacify" it, and restore its equanimity, at the expense of my own. But a sound spanking, when it got to the throwing-itself-on-the-floor point, amid its cries, was exactly the dose needed for the cure of such spasms. To spank a baby for waking up with fright and screaming in the night, is a barbarous practice, which I have over heard with extreme indignation. Of course that is not common.

I have known more than one child, who learned how to get its own way every time, by screaming if denied, and holding its breath, until the frightened parents were ready to do anything to have it breathe once more. But no child ever died from any such voluntary breathlessness. Fortunately, our breathing is not wholly under our own control, and if a child should hold its breath until it became unconscious, the lungs, released from the power of the vicious will, would go about their work again, and save the child.

Home Binding of Papers and Magazines.

We know what handsome books are made by getting old magazines bound up in yearly or half-yearly volumes. Many of us can not afford to have all of the old magazines and papers, which we wish to preserve in order, bound by the regular bookbinders. It is possible to bind them together so as to preserve them in a convenient form, with very little trouble, and with no expense to speak of. Sew them together with strong cord or twine. Don't sew them "over and over," like the seam in a sheet, as papers sewed in this way tear out badly, and the book loses its shape. To make a thick book, a good strong awl is needed. Lay the numbers in order, removing the covers, if they are covered. Fit the backs evenly, and make awl holes from half to three-quarters of an inch from the back edge, through the whole pile, not more than two or three inches apart. Sew through these with a darning needle and twine, back and forth, until the book is firm, fastening the ends of the twine securely. If a good strong cover be desired, it is best to bind the backs with strong cloth. This may be done by folding a strip of cloth over the backs (the whole pile together) before piercing the holes. To this strip, on front and back, paste paper, one thickness over another, until a thick board is formed, drying it with a warm flat-iron as you proceed, so as to keep a smooth and even surface. Trim the edges, paste something strong over the back, line the covers neatly, and embellish the outside according to taste.

This is a good way to bind children's magazines, but the covers are quite essential, as without them the leaves roll up and wear away fast with children's usage. I have found it a good way to treat the *American Agriculturist.* My father used to prepare neat little wooden slats, about half an inch wide, and less than half as thick, with little gimlet holes, sewing through these, as he bound a pile of papers, one slat at the top and one at the bottom of the pile. These held the papers firm and preserved them, by preventing the folding of the volume. The firmer and thicker the sewing, the less danger is there of folding, which wears out a home-bound volume faster than anything else.

Two Bread Recipes.

In a diary for 1874, I find two recipes for bread, given me by a careful housekeeper, who assured me of their merits. I was not keeping house at that time, and the diary gave place to another one, and the recipes have never been tried by me. But I doubt not their goodness, especially the one for

Brown Bread.—Three even cups of corn-meal, one heaping cup of white flour, three cups of sweet milk, one cup of sour milk, one-half teaspoonful of soda, one-half cup of molasses. This fills a two quart basin. Steam 3 hours, and bake 15 minutes.

Graham Bread.—Four and one-half cups graham flour, one and a half cup wheat flour, two-thirds cup molasses, two-thirds cup yeast, one pint water, one teaspoon salt. Stir thick at night. Steam three hours next day, and bake fifteen minutes—in the same buttered basin where it was raised.

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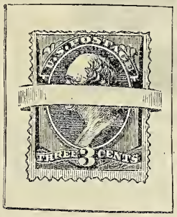

Sending Postage Stamps.—When wafers came into use, in place of sealing wax, some one—probably Lord Chesterfield—protested against fastening letters with them, because it was vulgar to "send spittle to our friends." The general use of gummed envelopes at the present time make it necessary to disregard this, and we moisten our envelopes with the mouth, even if it may be thought vulgar. There is one way, however, in which we "send spittle to friends," which is unpleasant, and may be avoided. All thoughtful persons in writing for a favor, or expecting an answer, which will be of benefit to themselves only, enclose a stamp for return postage. The usual custom is to wet a corner of the stamp, just sufficient to hold it, and attach it to the letter. Some, by the way, to make it sure, wet the whole stamp, and stick it fast, so that it takes more time to remove it than it is worth. One does not like to use a stamp that has been partly wetted by another, and the necessity for doing so, may be readily avoided. When we get a lot of stamps we put by those from the margin of the sheet, for enclosing in letters. These stamps have a blank margin, which is partly gummed; and by means of this the stamp is attached to a letter and may be removed by tearing through the punched holes. When we have no stamp with a marginal piece, we then make two cuts through the letter, and put the stamp under the band or slip, thus furnished, as shown in the engraving. While some persons do not notice such things, others are extremely sensitive, and would prefer throwing away a stamp to wetting it, after it had been touched by another, and it is safe to assume that all prefer clean stamps.

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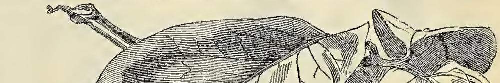
How to Serve Eggs.—"G. T. E." has an abundance of eggs, but is tired of boiled, dropped, scrambled, and omelette, and asks if there are not other ways of cooking, to make a variety. We were once in a foreign city with a companion who was most fastidious with respect to his food, and had, above all else, a special horror of garlic; to be sure, he had never tasted it, but the smell was enough, and he was—it being where Spanish customs prevailed—constantly in dread of garlic. Both were served one morning at breakfast, to a dish consisting of hard-boiled eggs, quartered, and covered with some kind of sauce. We tasted the eggs, and found them delicious, and that their excellence was due to a judicious flavoring with garlic. We said nothing, but waited for the out-break; quarter after quarter of egg disappeared, and our friend's plate was passed for more. We asked him if he liked it, and had him committed most thoroughly to the fine flavor of the sauce. Afterwards we told him that it was garlic that had made the dish so acceptable—and never after heard any more about garlic. We occasionally imitate this dish, in a manner. The eggs are boiled *hard*, shelled and cut lengthwise into quarters, while hot; drawn butter is ready to pour over them, which is first flavored by stirring in sufficient "Worcestershire sauce" to suit the taste. Many are not aware that the peculiar flavor for which they prefer "Worcestershire" to all other sauces, is the trace of garlic it contains, and we use it as a handy way of imparting that flavor to this sauce. Garlic should never be trusted to incautious hands; a mere suspicion of it is as pleasant as its full force is repulsive; it is eminently one of the good gifts to be used, but not abused. As to hard-boiled eggs, they are, it is true, less digestible than soft-boiled, but except for very delicate persons, are not objectionable.

BOYS & GIRLS' COLUMNS.

The Akee Fruit.

So many steamers run between New York and the various West India ports, that the various tropical fruits are abundant and cheap in the city. Besides pineapples, bananas, and such well known fruits, the steamers sometimes bring small quantities of the rarer kinds, which are sold at the fruit stores. It is not unusual to find Guavas, Avocado Pears, Mamee Apples, Mangoes, and such tropical fruits offered for sale, and sometimes, though very rarely, the fruit of the Akee. Some time ago one of our artists came across the Akee at a fruit store, and made a drawing of it for an engraving, which we give here, that you may see what an odd-looking fruit it is. The Akee grows in most of the West India islands, and is a tree about 30 feet high. The fruit is yellowish and ribbed, and when quite ripe breaks open, as shown in the engraving. It is then very showy, as the seeds are jet black, and each, like the one shown separate, has attached to it a pure white appendage, which is the eatable portion. This has a very pleasant taste; most of the tropical fruit are very sweet, but this is somewhat acid, and those who live in the countries where it is abundant, become very fond of it. Of course it is very rarely seen at the stores, and only known as a curiosity.


THE AKEE FRUIT OF THE WEST INDIES.

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The Doctor's Correspondence.

I wish to say a word to my young friends who write to me. I intend to answer here the questions asked by Boys and Girls, but only those that I think will be of interest to all the other Boys and Girls. Some send me puzzles, and others problems in arithmetic to which they wish answers. All letters about puzzles should go to Aunt Sue. I have no time to work out problems; they properly should go to your school teacher. Some questions are about matters that can not be well answered in such a manner that young people can understand them, and these, together with questions that nobody can answer, are left unnoticed. The kind of questions that I especially like to get, are those concerning the common things that you see about you. I wish to encourage you to observe, that is to use your eyes. Boys or girls who live in the country should never find it "dull," or be at a loss for something to interest them. Plants, stones, birds, insects are everywhere, and there is always something to be learned from them. When you wish to know more about these and other natural objects than you can learn at home, I will try to help you. I do not mean that all your questions should be about such things, for I expect you to write on any other matters, about which you think I can aid you. Lately several old people—that is grown up persons, have written to "The Doctor," saying that they would like an answer in the "Correspondence." This can not be done. These columns belong to the Boys and Girls, and to them only. If older persons find anything to interest them here, I am glad of it, but we can not give up any space to them.

ABOUT "EARTH-STARS."

Master A. G. C. picked up last summer some curious things near Providence, R. I. As he could find no one to tell him what they were, he sends them to "The Doctor." No doubt Master Albert will be much surprised to learn that these "things" are plants—and very curious plants too. But that the rest of you may know what I am talking about, let me give an engraving of them. At the left hand, (fig. 1.), you have one of the things as they now appear, while the other engraving, (fig. 2.), shows how they looked when my young friend found them, or as they might have looked in the morning, before the dew had dried off, or soon after a shower. To describe a thing like this in such a way that you will fairly understand it, is sometimes rather difficult, as they belong to a class of objects about which grown people in general know but little, and of course youngsters know less. You all know that our common plants have flowers, and that after the flowers come the fruit and seeds. Most of our common plants have flowers—some more showy than others. When I say that all plants are either flowering plants, or flowerless plants, (plants that bear no flowers) you will not find it difficult to understand that. If I ask you to name some flowering plants you will at once give the names of a great number, from chickweed to the apple-tree; but when I ask for the names of some of those which bear no flowers, you will—unless some of you have studied a little about plants, be puzzled. There are several different kinds of flowerless plants, which are not much alike except in the one point, that they have no flowers; thus the ferns are one family and the mosses another, of flowerless plants; the seaweeds, and the green scum you see on pools of water in the spring are another family of these plants; then there is a great number of things—for perhaps you never thought they were plants—some of which you must know as mushrooms, toadstools, puff-balls, and even the mold upon bread, and all other molds, that belong to another family of flowerless plants. Very little do they look like plants, for they have no green leaves, nor is there anything about them that is like common plants. Still you must take my word for it that they are plants, until you are old enough to learn why they are so classed. Probably almost every boy who lives in the country has seen a "Puff-ball," a rounded body,. sometimes as big as a pullet's egg and sometimes the size of a large apple, or much larger. Boys usually notice these when they are dry, and if hit slightly will send out a great cloud of smoke-like dust, in a sudden puff—hence they are called puff-balls. If you were to find them earlier, you would see that they are whitish, and fastened to an underground portion, and if you break one in this condition, you will find no dust inside, but it is full of what looks like a white pith. Now I can only briefly say that the greater part of this puff-ball is under ground. What we should call the branches of a plant of another kind--and this ball appears only when the under-ground part is full grown—this ball serves for the under-ground plant, just the same as flowers and seeds do to other plants—that is, allows it to multiply its kind. When the puff-ball is ripe, the dust will *puff* out when you hit it, and each little particle of this dust, so fine that it is carried a long way on the wind, will, if it falls in the right place, grow, and make more under-ground plants which will produce more above-ground parts, which, when ripe, are these same puff-balls, and so you will see that this dust serves just the same as seeds do for larger plants. This is a long story, but I think you will understand it. Now the things Albert wishes to know about are own cousins to the puff-balls. They have an underground part that we do not see; at the proper time a little ball shows itself on the ground, of the size of fig. 1, but round, as that has shriveled. Now instead of acting just like the puff-ball, this has two coats or peels, just as an orange has before you get at the juice. When this ball is ripe, this outer coat splits up, just as you sometimes cut the peel of an orange. This outer coat is very easily affected by moisture. If rain or dew comes, the parts turn back, as shown in fig. 2, and with such force as to tear it away from the under-ground part, and send it, with a bounce, for some distance. When it becomes dry, the points all curl up as in fig. 1. So with the dewy morning and drier midday—or with shower and sunshine, this opens and shuts and goes jumping along—why does it travel? you will wonder. The outside is so curious and so affected by moisture that you have forgotten the central part, the ball. In time, this opens by a little hole—and just like the puff-ball, puffs out a cloud of dust, which, like the puff-ball dust, will grow and make more plants. So you will see that this opening and shutting helps to scatter the dust. You of course want to know what is the name of these curious plants. If the points of fig. 2 were out straight they would look like a star, and they are often, in a wet time, found spread out flat on the ground, and they are called "earth-stars." Botanists give the plant the name *Geaster*, which is exactly Earth-star in Greek. While they are not so very common, I have more than once seen them so abundant that one could, if he chose, pick them up by the basketful. It is a pretty long story, but if I told you anything about it I wished you to understand something more than the mere name.

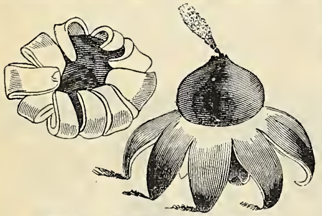


Fig. 1. EARTH-STARS. Fig. 2.

ABOUT "SEA MOSS."

Miss M. T. has received from a friend who passed the winter in Florida, something which she thinks is a "Sea Moss," and wishes to know more about it. My correspondent is right in supposing it to be from the sea, but the name "Sea Moss," though often used, is incorrect. The true mosses are, with few exceptions, land plants, and those plants, found in both salt and fresh water, that are often called mosses, are as different from the true mosses as can be. In the talk about Earth-stars, I state that there are plants that do not produce flowers. The "Earth-star," is an example of one family of these plants, the Fungi—another family of flowerless plants, live entirely in the water, and are of many beautiful forms and colors. The botanist calls them *Algæ*, and those that live in salt water are commonly known as seaweed. The one sent, (fig. 3), is called the "Peacock's-tail,"—the botanists name for it is *Padina Pavonia*. It is usually about twice as large as the one shown in the engraving, and is found in the sea in warm countries all over the world. When dried it is of different shades of olive green, but when seen in the water, it is very beautiful, and shows all the colors of the rain-bow.

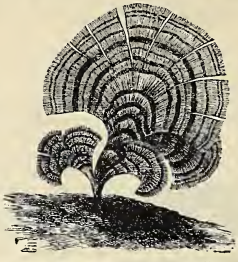


Fig. 3.—"PEACOCK'S-TAIL."

THE RUSSIAN ARMY.

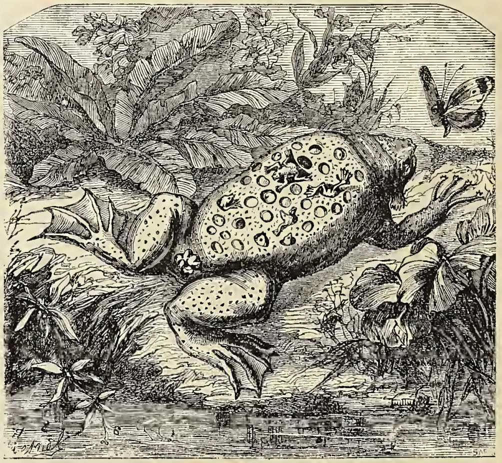
Well, here is an unusual question. J. W. W., Rockland Co., Va., writes that he has no Cyclopædia, but so long as he has "The Doctor" to go to with difficult questions, he does not so much miss it. Certainly, after so appreciative a note as this, I must try and answer the young man's question, which is: "Do the Russians all have to serve a certain number of years in the army? If so, how long?"—While I can reply to most of the Boys and Girl's questions off-hand, this is so much out of my line that I must go to the Cyclopædia for an answer. There I learn that every Russian, who is not in some way disabled, of the age of 20, is liable to 15 years of military duty, six of which must be in active service, and no substitutes are allowed. There are a number of exceptions, as to active service, but nine years of what is called reserve service, is exacted of every man. This refers to the militia, but enlistment in the regular army, and a term of service there, exempts one from this service.

CARELESS LETTER WRITERS.

I have a letter from a boy asking several questions. He says, "If you would be so kind as to answer through the *American Agriculturist*, you would very much oblige a boy of 12."—I will answer "a boy of 12," but perhaps not as he would like. In the first place, "Boy of 12's" letter is about things, the answer to which would be of no interest whatever to any other boy or girl, and I can not answer such letters in the paper. But more than this, his letter does not show where he writes from, nor does it give his name. There is a blind post-mark on the envelope which shows that the letter comes from somewhere in Pennsylvania, and that is all that shows where "Boy of 12" lives. The young man is old enough to write a well expressed letter, and even a "Boy of 12" should know that every letter, written to any person whatever, should start with his address. That is, his Post-Office, and State in full, and should end with his full and proper name. If he writes something for the paper and does not care to have his name printed, he can sign "Boy of 12" or anything else he chooses, but his *real name* should always be given. It is not rare for older people to write without giving their names, and the editors very properly put their letters into the waste-basket. *Always* give name and address in full.

The Surinam Toad.

The history of our common toad is a strange one; the eggs are laid in the water, and hatch out, not as toads, but as tadpoles, or "pollywogs," as boys often call them. In the early part of their life, they live in the water, just like a fish; at length the tadpoles get legs, lose their tails, and come out as regular toads. Frogs do the same, and it is difficult to tell a frog tadpole from one that will turn out to be a toad. All this is strange enough, but there is a toad in Surinam that manages in a different, and still more singular manner. After the eggs are laid in the water—and most of you have seen the eggs of our toads and frogs, which the boys call "frog's-spittle," in which the eggs are all surrounded by a clear, jelly-like substance—the male-toad heaps the eggs on the back of


THE SURINAM TOAD.

the female, and there they stay. The skin of the back of the female swells up, and forms little pits, or cells, in which each tadpole lives. Instead of taking their chances in the water, like the tadpoles of our frogs, each one has its little hole in the skin of the mother's back, where it is safe from the attacks of fishes, and all other enemies, and it stays there, until it has gone through all the tadpole life, and is ready to come out a young Surinam toad. The engraving shows the mother-toad, with some of the young just escaping.—Very curious, isn't it?

About the "Puzzling Puzzle."

We gave, in May last, under the heading of "A very Puzzling Puzzle," diagrams and very much the words of the correspondent who sent it. In our remarks we stated that it had been sent to Aunt Sue, and she "gave it up." We were not quite correct, and find that we did that lady injustice. In fact, she really pointed out the direction in which the solution of the puzzle would be found, and made a rough drawing, saying if that was not the proper answer, she would "give it up."—In fact, Aunt Sue was really the first one to show the fallacy which makes the thing a puzzle at all. Answers have been sent to Aunt Sue, to The Doctor, and to The Editors, from a number of persons living in almost every State of the Union; some of these answers are accompanied by very elaborate descriptions, and carefully made diagrams, but with such a host, we cannot give all proper credit. We thank all for the trouble they have taken, and acknowledge them below in the usual manner. The following, from Aunt Sue, gives the substance of the various explanations.—She says:

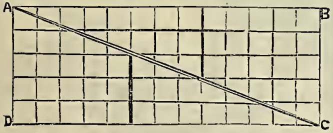


Fig. 1.—DIAGRAM SHOWING THE SPACE.

"We have received several letters concerning the 64 and 65 squares, and the verdict is that a perfect parallelogram cannot be made from the pieces cut from a square as marked in the illustration given on page 187 of the May *American Agriculturist*; that there will be a rhomboidal space running through the center of the parallelogram diagonally from end to end, (fig. 1), the area of which is exactly equal to one of the squares. The reason for this, is, that the angles do not form a straight line because, in cutting across one piece, the line falls two squares in passing over five: while in the other it falls only three squares in passing over eight. So that if you should take the aggregation of pieces necessary to fill the space left in the parallelogram, and put them together as in figure 2, you would just get the 65th square."

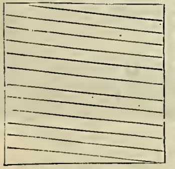


Fig. 2.

We have received letters embodying the substance of the foregoing remarks from A. J. T., Fillmore B. S., H., S.; A. F. S., Townsend W., T. B. A., A. S. W., W. L. W., C. E. N., Thos. D. H., J. A. B., J. A. L., F. S., C. F. L., "Geo. Metry," W. S. Morgan, "Architect," C. W. S., R. S. H., D. McC. K., P. B. T., A. W. M., L. R. C., "Mount Vernon," N. F. P., C. E. R., E. C. W., R. B., E. H. A., Mrs. M. B. Y., C. O., F. M. H., J. M.

Aunt Sue's Puzzle-Box.

"THE PRIZE ENIGMA."

Our little lady—"Clara Josephine"—has been persuaded to perform the task assigned her. The envelopes superscribed "Answer to Prize Enigma," were dropped into a large cardboard box and placed upon the floor. C. J. stationed beside them. Her first ejaculation was "oh—h!"; then with one fell swoop, a dive, a flirt, and a scuffle, away went the letters all over the carpet. They were carefully gathered together again, and, by judicious management, she was persuaded to hand me one at a time, which I duly marked "1," "2." "3," "4," etc. And this was the order of the enclosed addresses:

1. Geo. M. Taylor, Box 19, Riverside, Burlington Co., N. J.
2. Mrs. M. Thomas, Clear Lake, Sherburne Co., Minn.
3. Frederick Bruce, P. O. Box 168, New Rochelle, Westchester Co., N. Y.
4. H. A. Frink, Westerly, R. I.
5. D. Martinez, 1801 Park Avenue, Philadelphia, Penn.
6. Jas. A. Windsor, Jr., Barrington Centre, R. I.
7. Jessie L. Kirk, 53 2nd street, New York City.
8. Edward D. Campbell, 141 Larued st., E. Detroit, Mich.
9. Abraham Resh, Bird in Hand, (what a queer name for a town, city, village, or whatever it is,) Lancaster Co., Penn.
10. John Brown Mitchell, Box 326, P. O., Clinton, Oneida Co., N. Y.

Only four were left in the box, and they looked so lonesome that I determined to count them in also, and send prizes to all; but upon opening them, I found that two were written by the same person, though signing different names (one "Nellie Hunt," and the other "Emma Goldie"), and as I did not propose to give two prizes to one individual, and could not quite tell how to identify the right party, I must put them down *blank*. The remaining two were May Goldie, Mott Haven, New York City, care of Geo. W. Kirk, and C. S. Campbell, Owego, Tioga Co., N. Y. (I should like to know if these two Campbell's are related to each other, as it is rather curious that there should be two of that name out of only fourteen.)

The answer to the enigma is—"As you cannot avoid your own company, make it as good as possible."

Not thinking it worth while to wait until July before notifying the puzzlers of their success, I have already (May 13th) sent some of the prizes, with a request that the recipients would acknowledge the same, and also tell me how they found a clew to the solution of the enigma. I have received one answer, which gives such an excellent description of the *modus operandi*, that I publish it entire, (it is better than one of my "lessons"):

"WESTERLY, R. I., May 11, 1877.

Dear Aunt Sue:—Please accept my acknowledgements for the very neat 'Pocket Companion' sent me on account of the 'Prize Puzzle,' and convey my kindest regards to Miss Clara Josephine (you know how to do it) for her perspicacity, if that is not too big a word for such a little lady, in selecting me as one of the recipients for her favor. Now for the *modus operandi* of the solution. I seldom pay much attention to that style of enigma, but this being preceded by *instruction*, attracted my notice. At first I did not look at the dictionary, but glanced over the meanings and could think of none to suit. For the first, I knew no word of eight letters meaning Fop. For the third, I did not know whether it should be a noun or an adjective. For the fourth and fifth, words of three letters were so scarce that I could think of none; and so I went on, down to the bottom, completely at sea. Then I took the dictionary (I had no unabridged Worcester, but I have a Webster), and looking at Fop, I took each of its meanings and looked for its synonyms without result. I then took the second and pursued a similar course, succeeding no better. By this time, to use a slang term, 'I smelt a rat,' and made up my mind that none of the words could be found by referring to the meanings given. Then I pursued another course. Of course the 'musical instrument' and 'an animal' were too general to begin upon, and besides I wanted one which had No. 20 in it; so I, noticing that 'carniverous animal' and 'fop' each had No. 6 and 'fop' No. 20, selected them for the attack. I had been working at some difficult Algebraic Problems, and my 'dander' was up and I was bound to do it. I made a list of carniverous animals as follows: Civet, Genet, Hyena, Otter, Ounce, Ratel, Sable, Stoat, Tiger, and noticing that five of them had the letter 'e' for the next to the last, and that must be the *third* letter in No. 1, I looked for a word meaning Fop, whose third letter was 'c,' and there was no such word. That left me but four on the list. I then tried 'Sable,' but there was no word with 'L' for a third letter meaning 'Fop.' Next I tried 'Ounce,' and found Macaroni and Macaroon. Of course I did not have to look at all the words consecutively in the dictionary, but only such as commenced with a consonant followed by a vowel After knowing what No. 20 was, I took address for adroitness, which gave me 'S' for No. 2, and it did not take me long to find 'Sop' for a pacificator, etc., etc.

Rather a long answer to your question of which item I guessed first. Yours, respectfully, H. A. FRINK."

Is there one among you who does not know how to find out anagrams? Well, suppose I tell you to find out the original word, from the anagram "sad rub"; you take the letters S—A—D—R—U—B (if you have no printed letters, take a strip of cardboard and print the letters upon it yourself), then cut them separate, and move them about (transpose them) until you discover the word "absurd." If you desire to construct anagrams, reverse the process. Select your word, make small words out of the letters composing the original word, using all the letters every time, until you get a sentence to suit you. For instance, we will take the word "A—T—M—O—S—P—H—E—R—E"; now let us see how many sentences we can make—"Seraph to me" (well, there's no sense in that!)—Phrase tome;—He taps more;—O! stamp here;—Heart poems;—Hope, master;—A shop metre;—Oh! see tramp;—Mere hot sap;—He tore maps;—Stop! hear me!—Tom see barp;—Home repast;—O! three maps;—Mother's ape;—and I dare say we could make many more combinations. None of the above anagrams are very good, as they are neither relevant nor comically irrelevant (like "Real fun," which resolves itself into "funeral"); but I think the most tolerable of the lot is "Stop! hear me!" And as our anagrams are made more for amusement than for approbation, we will not be too particular.

The following old English anagrams are excellent:

Sly ware—Lawyers.
It's in Charity—Christianity.
Great helps—Telegraphs.
No more stars—Astronomers.
Got as a clue—Catalogues.
Best in prayer—Presbyterian.
'Tis ye govern—Sovereignty.
There we sat—Sweetheart.

Now, little ones, go to work and make some anagrams, but be sure that you send only the best of them to AUNT SUE.

Below we give some anagrams for you to try your skill upon:

1. Seedy tray.
2. Did I feign?
3. Even road.
4. Idle stoic.
5. Troy's deed.
6. Draw faster.
7. Amusing my—.
8. I spyachin.
9. Nine treats.
10. No mimic roses.

EASY ANAGRAMS.—(*For the little ones.*)

1. Shore.
2. Or ivy.
3. Bleat.
4. China.
5. No ears.
6. No cat in.
7. To eat sop.
8. Hurt hog.
9. Been wet.
10. Red ear.

NUMERICAL ENIGMA.

I am composed of 26 letters:

My 18, 21, 23, 9, 6, is something that each one of us possesses, which may be transposed into a planet.

My 4, 3, 11, 17, is something necessary to each one of us.

My 26, 19, 16, 15, is generally an unpleasant noise, though there may be exceptional cases.

My 2, 12, 20, 10, is a small animal.

My 1, 7, 25, 15, 8, is a large animal, though it is often called something else.

My 11, 23, 13, is a tool.

My 24, 14, 22, 5, is what sensible people are.

My whole is a well-known proverb.

ANSWERS TO PUZZLES IN THE MAY NUMBER.

ILLUSTRATED ENIGMA.—The Centennial Exhibition.

HIDDEN COUNTIES IN OHIO.—1. Darke. 2. Medina. 3. Allen. 4. Logan. 5. Wayne. 6. Ross. 7. Lorain.

(Maud Beach, a little girl nine years old, answered these.)

HIDDEN DEITIES.—1. Tyro. 2. Arge. 3. Io. 4. Ino. 5. Até. 6. Comus. 7. Abas. 8. Orus.

THE LIQUOR AGENT'S ACCOUNT, given in April, has been correctly answered (in addition to those credited last month), by: C. E. N., M., W. A. H.

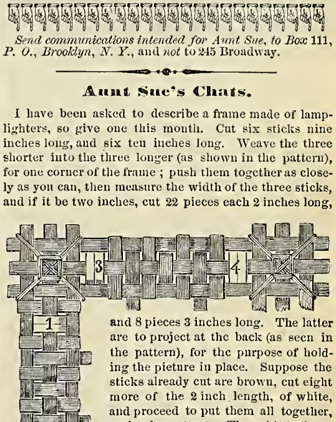
Thanks for letters, puzzles, etc., to W. W. B., L. J. S., Ella M. K., G. A. C., H. H., Lollie F. T., E. A. Y., W. W., Emma, Frank Nichols.

* * *

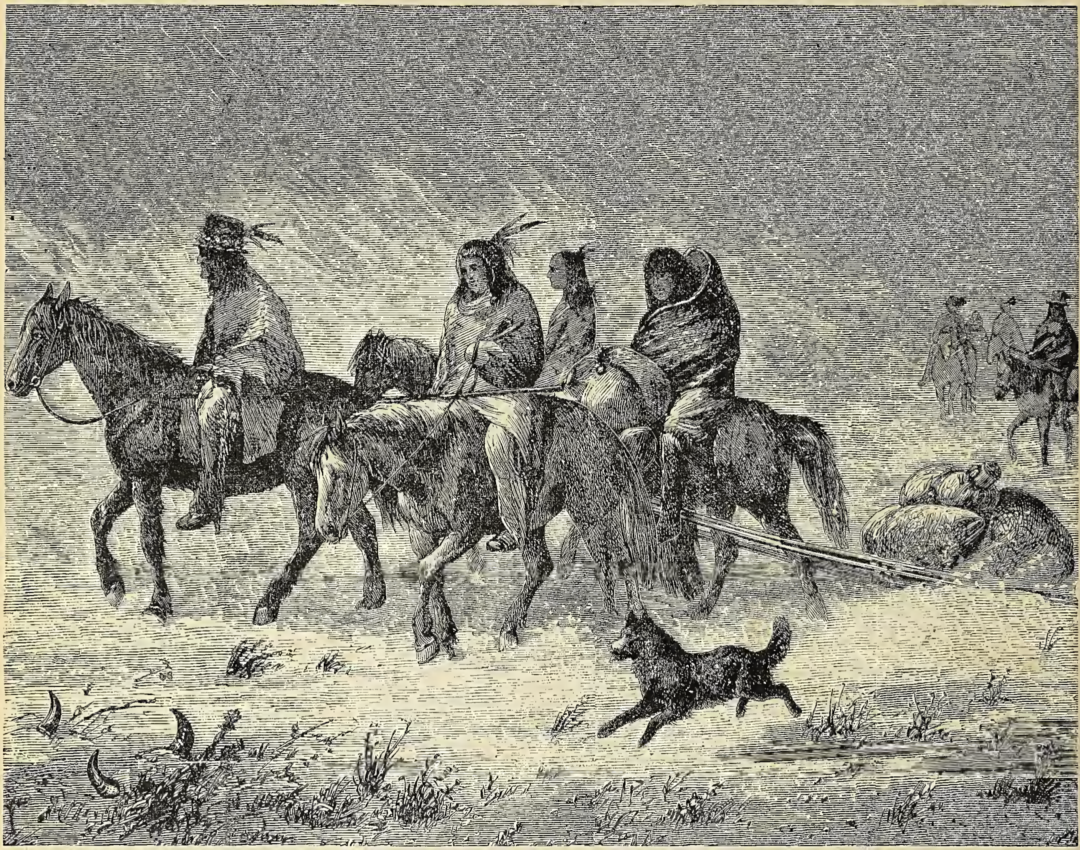
Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Aunt Sue's Chats.

I have been asked to describe a frame made of lamplighters, so give one this month. Cut six sticks nine inches long, and six ten inches long. Weave the three shorter into the three longer (as shown in the pattern), for one corner of the frame; push them together as closely as you can, then measure the width of the three sticks, and if it be two inches, cut 22 pieces each 2 inches long, and 8 pieces 3 inches long. The latter are to project at the back (as seen in the pattern), for the purpose of holding the picture in place. Suppose the sticks already cut are brown, cut eight more of the 2 inch length, of white, and proceed to put them all together, as in the pattern. The white pieces are marked 1, 2, 3, 4; the rest are brown. The only difficulty about making such a frame is in joining the six sticks at the last corner (after having completed the four sides and the three corners); but all it requires is dexterity. The corners may be ornamented with colored worsteds, as shown in the corner of the illustration. You will see how to push them together, under and over, without further explanation. Of course you can vary the colors and lengths to suit your tastes and the size of your picture, remembering that when a different color from the main frame is to be used, the *ends* should be put *under* the *outside* bars, as shown in the white pieces at 1, 2, 3, and 4, in the pattern.



THOMAS THUMB.—Puzzles sent to us must always be



GOING TO THE RESERVATION. — FROM A SKETCH FROM LIFE. — *Drawn and Engraved for the American Agriculturist.*

accompanied by their answers. Enigmas, made upon the names of private individuals, are of no general interest, and are not likely to ever be published in our Puzzle Box.

Going to the Reservation.

In the days of Indian-wars, unhappily not yet quite over, many of you have, no doubt, read in the papers that "Red Cloud" had come "in," that "Crazy Horse" was expected "in," or that "Young Man Afraid of his Horses" would not come "in," and you must have wondered where "in" was, and what it all meant. The various Indian tribes have long been a great trouble to our Government. They claim as their own just so much of the country as their ponies have strength to travel over. As they raise nothing, and as they get all their food (except what they steal) by hunting, even a child can see that it must take a great many acres of land to support only one Indian. Many years ago the Government made treaties with the different tribes, that they should give up their wandering life, go upon certain parts of the public lands, called reservations, (because they were *reserved* for the use of the Indians), and stay there. These reservations are immense tracts of land, as large as some counties, or even as large as some of the original States. When the Indians agreed to stop running all over the country to hunt game, and go upon the reservations, the Government agreed to give them, once or twice a year, as may be, certain things upon which they could live. They were to have beef, pork, and other food, needles, thread, cloth, shoes, and many other things, indeed, were to be well provided for. Some of the tribes went upon the reservations, and have staid there, as they agreed, keeping within the bounds, and regularly receiving the food and other articles from the Government. Others, however, did not like to give up their wild and roaming life. They would stay upon the reservations for the winter, but as soon in the spring as there was grass enough for their ponies to live upon, they would go off, and wander where they pleased. The grass gave them food for their ponies, and they could hunt buffalo and deer enough to give them food for themselves. As for all the rest, why they could go to any frontier settlement, kill the people, and get their blankets, guns, take their food, and whatever else they needed. These wandering tribes are not many, but they have been enough to do a great deal of wicked work in killing innocent people and stealing their property. You must recollect that these Indians know no better. They and their fathers have always gone where they pleased; the white-man has made game scarce, and if the white-man has anything that they want, they will, if they are strong enough, kill the white-man—just as they would an Indian of another tribe—and take all that he had. It is these few tribes who would not go upon, or if they went there, would not stay upon, these reservations, that have made all the trouble, and have been the cause of the Indian wars of which you have lately seen so much about in the papers. These tribes number from a few dozen to several hundred Indians, who follow the lead of one, whom they consider their headman, or chief. When several such tribes unite, and make war, they are very serious enemies, as the wars of last year have shown. Of course a war between the Indians and the whites can end only in one way. The Indians, who make no arms or powder, and who produce really nothing, must be defeated after a while. Sometimes, when in very much larger numbers, they may be able to defeat a small number of troops, as they did General Custer and his men last year. But they can keep up no continued war, for they cannot fight and hunt too, and sooner or later all will go upon the reservations. The picture, showing a small tribe or family of Indians going to the reservation in early winter, to escape the hunger and cold that would soon come upon them otherwise, is one of the most life-like pictures of a party of our Western savages that we have ever seen. Most of the pictures of Indians show them on horses at full gallop, and dressed with much of feathers and finery, and riding with the air of a circus rider. For a short time, in the excitement of a fight, the Indian is a very lively creature, but generally he is a very uninteresting, dull, woe-begone person, much blanketed, and very unlike the usual picture. You, when you move, find load after load of furniture, many boxes of books, trunks of clothing, barrels of glass and crockery, and a host of other things that are thought necessary to make home comfortable, can have no idea of the poverty of the Indians. This family have with them all their worldly goods; they have but little clothing other than what they can wear; a few buffalo skins and blankets, a pot or two, and a few other matters, besides their tents and tent-poles, are all that they own. The way in which they pile up their things upon their tough little horses—those of the women always having the most to carry—the turning of the tent-poles into a sort of sled to carry the tents and other parcels; the way in which the riders, both men and women, sit upon their horses, and the air of the whole party, horses, riders, and traps, are so thoroughly like scenes we have seen over and over again, that we are sure that it gives you a better idea of Indians as they are, than almost any other picture we have seen. While we know them to be, as a general thing, lazy, thievish, cruel, and brutal, we cannot after all help pitying them when we think of the life they lead. Life is, with them, a constant struggle to get food, which they must hunt, or steal, but never work for. They do not read, they know nothing of the world beyond the distances to which their wanderings take them. They see that the white man's settlements each year come nearer and nearer, and the buffalo and other game grow scarcer and scarcer. While we cannot wonder that they look upon us as enemies, and that they get together large bands to fight us, we must stop their force by force. The Government has wisely offered to feed and clothe those who will live upon the reservations in peace, for the old Indians will never learn any other way of life, but the young may be taught to work, as we do, for food, but the grown-up savage must be either fed or fought.

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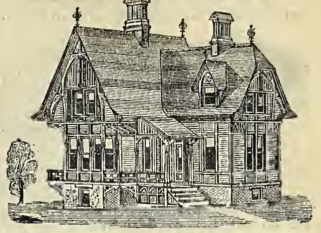

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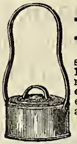

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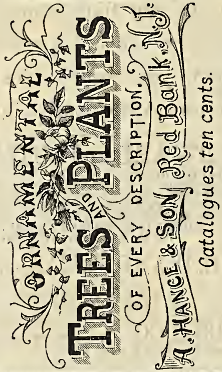

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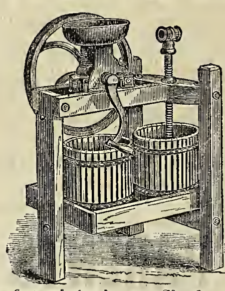

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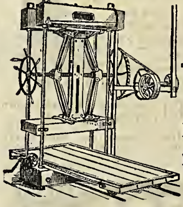
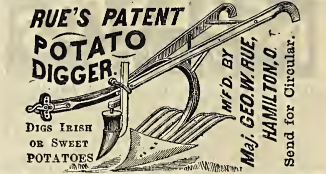
The Adamant Plows, hard metal, more durable, and cheaper to repair than Steel Plows, run steady, adjustable beams. Field Rollers reduced. Circulars free.



POWER
Cider and Wine Press

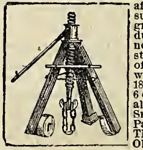
WITH
Double Platform.

BOOMER & BOSCHERT PRESS CO.,
SYRACUSE, N. Y.



RUE'S PATENT POTATO DIGGER.
DIGS IRISH OR SWEET POTATOES
M'F'D. BY Maj. GEO. W. RUE, HAMILTON, O.
Send for Circular.

The Chamberlin Screw Stump Machine,



after 10 years test, has proved its superiority over all others, by its great exhibition of strength and durability, combined with cheapness and ease in pulling all classes of stumps. The Company's challenge of $1000 for a stump machine which would excel theirs, has stood since 1867 without being taken. They build 6 different sizes of machines, to pull all kinds of stumps. They make Subsoilers and Ditching Plows. For Particulars, Prices, etc., address THE CHAMBERLIN M'F'G CO., Olean, N. Y.

THE GILPIN SULKY PLOW.

Constructed entirely of Iron and steel. Easily operated entirely by *one lever*. Simple, strong, durable. Performs better work in unskilled hands than a skillful plowman can do with walking plow. 7,000 sold and in use in two years, giving unbounded satisfaction. Gold Medal at Illinois State trial 1874, and Indiana State trial 1876, the two highest ever awarded sulky plows.

R. H. ALLEN & CO., 189 Water St., New York, Agent.
DEERE & CO., Moline, Ills. Established 1847. Manufacturers of Gang Plows, Cultivators, and Steel Plows of all sizes, especially adapted to sticky soils. Send for circulars.

GIANT POWDER.

MANUFACTURED BY THE
ATLANTIC GIANT POWDER CO.,
61 Park Place, New York.

Price, per lb..........50 cts.	Caps or Exploders, each 02 cts.
Fuse, per 100 feet......75 cts.	Nippers, per pair........50 cts.

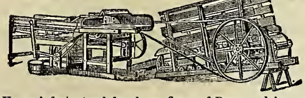
Pamphlets mailed on application to above address.

1877.—LEVEL TREAD HORSE POWERS.

Awarded a MEDAL and DIPLOMA OF HONOR, at the International Exposition, Philadelphia, 1876, to

HEEBNER'S IMPROVED

Level Tread Railway Horse Power and Speed Regulator.



Horses' feet stand level on floor of Power; labor and fatigue of the horse diminished; power increased; money saved. Smooth-shod horses work on them better than rough-shod on the old style Powers; have a slower walk for horse. These Powers are single or double-geared, for one or two horses, with the only successful SPEED REGULATOR in the world. We also have the simplest, most desirable and cheapest Threshers, Separators and Cleaners, for one or two horses. These Powers and Machines will do more work, with less labor for horse or operator, than any other; pronounced superior by every purchaser. Have on record in our office a large list of First Premiums, Diplomas and Medals of State and County Fairs in the United States. We are the Proprietors of the Patents and Sole Manufacturers. ESTABLISHED IN 1840. ☞ Send for Circulars, and learn of the great success of these Machines. Address

HEEBNER & SONS, Lansdale, Montgomery Co., Pa.

(Please state if noticed in the *American Agriculturist.*)

The FEARLESS

Railway Threshing Machine proved itself the "Best at Centennial Trial," and was the only Machine awarded a

CENTENNIAL MEDAL

AND CERTIFICATE OF MERIT,

on both Horse Power and Thresher and Cleaner, at the Centennial Exhibition, as shown by Official Report, which says: "*For special features in the Power to secure light running and minimum friction. For the ingenious form of the Straw Shakers, which insure the proper agitation to separate the grain from the straw.*" For catalogue, address MINARD HARDER,

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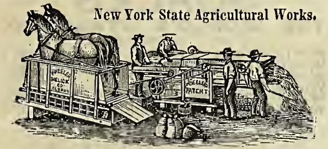
MEDAL MACHINES.

New York State Agricultural Works.

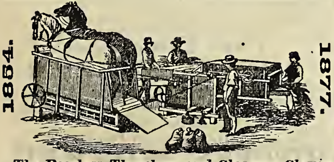


First Premiums at all Competitive Trials.

Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses, Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,
ALBANY, N. Y.

Send stamp for Circular and report of Centennial trial.



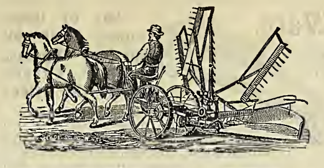
The Peerless Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—Grain Fans and Corn Shellers. Our machines have received the highest testimonials and cannot be excelled.

B. GILL & SON,
Trenton Agricultural Works, Trenton, N. J.

The Anti-Friction Hay Carrier

Saves labor and money. It is simple; the grappling positive; it runs on friction rolls, hence will come back on slight incline. The track is inexpensive; the carrier costs but a trifle; many hundreds are in use. No trouble about getting over high beams, or to the end of deep bays. Hay is dropped where wanted, and the work of mowing is reduced. Track should be put up now while barns are full.

Send for circulars and designs for tracking barn, to U. S. Wind Engine & Pump Co., Batavia, Ill., manufacturers of the Old Reliable Halladay Standard Wind Mill.



THE JOHNSTON HARVESTER CO.,

Manufacturers of

Self Raking Reapers, Combined Machines, and Mowers,

Send for Catalogue. **Brockport, N. Y.**

SPRING STEEL TOOTH HORSE RAKES.

Highest Award. Medal of Honor at the Centennial and Vienna Exhibitions.

THE CHAMPIONS OF THE WORLD.

No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted, where we have none.

Send Stamp for Catalogues of Rakes, Threshing Machines, &c.

WHEELER & MELICK CO.,
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FOUST'S

HAY LOADER.

A perfect machine for rapidly pitching hay, barley, and all loose grain on the wagon, in the field. Increased success in the harvest of 1876. Received the highest and only award for Hay Loader, with Diploma of Merit at Centennial Exposition, based on field trial. Thousands in successful operation. *Send for circulars early to the manufacturers*, STRATTON & CULLUM, Meadville, Pa. ☞ KINGMAN & CO., Peoria, Ill., Gen'l Agents for Illinois, Missouri, and Kansas.

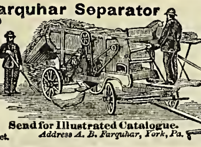
Dodge Hay Press—Automatic Feed.

Puts 10 tons in a common car—Presses a car load a day—Portable as a wagon. Guaranteed.

Address M. & H. M'F'G CO., Waterford, N. Y.,
or W. T. HANNA, 376 N. Water St., Chicago, Ill.

The Farquhar Separator

(Warranted)



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Lightest draft most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.

Send for Illustrated Catalogue.

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Steam Engines, Horse Power and Thrashers of all kinds. Also, Ploughs, Cultivators, &c., &c.

Horse Powers and Threshing Machines of all kinds a specialty. Send for large Illustrated Catalogue.

(*Established* 1844.)

CHAMPION FANNING MILLS.

Largest Fanning Mill Factory in America.

We make

5 Sizes for Warehouse, Elevator & Farm Use.

Separates No. 1 and 2 Wheat at one operation.

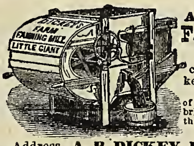
With attachment cleans and separates Clover and Timothy Seeds at one operation.

Has also a perfect Flax Seed rig.

Excels for Castor and White Beans.

BLAKE, BEEBE & CO., Racine, Wis.

The Best Fanning Mill in the World.



BUY THE A. P. DICKEY Fanning Mill.

No good Farmer can afford to market dirty grain.

A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

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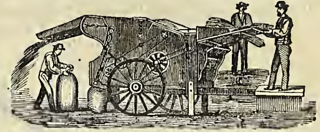
COTTON SEED HULLER

AND FEED-MILL COMBINED.

D. Kahnweiler's celebrated Patent for Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Highest award at the Centennial Exhibition. Grind and crack Corn, Peas, etc. Planters Power Huller, 15 bushels per hour, $175. Hand Huller, 5 bushels per hour, $75. Send for Circulars and Judges Report. Pay for itself in a few weeks. 120 Centre St., New York.

GEISER'S PATENT Self-Regulating GRAIN SEPARATOR,



Cleaner and Bagger, with new Patent Separating Tail End Elevator, and the latest improved Mounted and Down-Combined Triple-Geared Horse-Power, with Patent Lever and Brace Attachment. This is the Machine that came out "First Best" at the Great Field Trial at the United States Centennial Exhibition, held July 18th to 25th, 1876.

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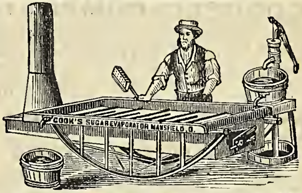
LEVEL TREAD HORSE-POWERS with Patent Governor.
ADAMANT PLOWS.
KEYSTONE and other **CIDER MILLS.**
REID'S PATENT BUTTER-WORKER.
STEEL-TOOTH HORSE RAKES.
EXCELSIOR FANNING MILLS.
EARTH CLOSETS, the Cheapest and Best.
Sold at the Agricultural Warehouse of
H. B. GRIFFING, 60 Courtlandt St., N. Y.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The Cook Evaporator and Victor Mill

are the BEST, and only standard machines.

FIRST PREMIUM AT 125 STATE FAIRS.

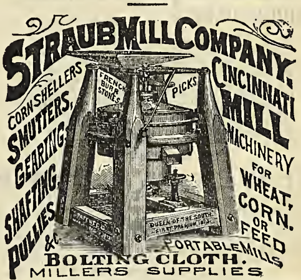
Grand Medal at Centennial Exhibition. Over 44,000 sold. Safe, Reliable, Economical.

Cane Growers can't afford to risk Crops with light, weak, unfinished mills, liable to break in the midst of the season. They can't afford to waste crops with mills that don't press out all the juice, or evaporators that make syrup and sugar **unfit for market,** and too little in proportion to the labor and fuel they require.

Blymyer Manufacturing Co., Cincinnati, O.

Steam Engines, Threshers, Bells. *Circulars sent free.*

ESTABLISHED IN 1844.



STRAUB MILL COMPANY. CINCINNATI MILL MACHINERY FOR WHEAT, CORN, OR FEED

CORN SHELLERS, SMUTTERS, GEARING, SHAFTING, PULLIES &c.

FRENCH BURR STONES. PICKS. PORTABLE MILLS

BOLTING CLOTH. MILLERS SUPPLIES

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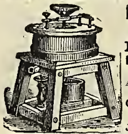

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Successors to Jas. Bradford & Co.

MANUFACTURERS OF

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Also, dealers in Bolting Cloths and General Mill Furnishing.

Office & Factory, 158 W. 2d St.

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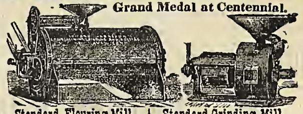
☞ PRICE-LISTS SENT ON APPLICATION.

HARRISON'S MILLS

Grand Medal at Centennial.



Standard Flouring Mill.	Standard Grinding Mill.
Scourer, Grinder and Bolter.	For all substances wet or dry.
8 feet long by 4 feet high.	Built of burr stone and iron.
Runs with belt 4 inches wide.	For heavy or light power.
Flours 3 to 6 bushels per hour.	Capacity of 20 inch stones.
Has double ventilating bolter.	Equal to any larger size.
For flour, middlings and bran.	Thickest French burr stones.
Gives every one his own grist.	Double discharge spouts.
Makes the best flour and yield.	Adjustable babbitt boxes.
Is a reliable flouring mill.	Solid self-adjusting burrs.

Centennial Judges award medal on ☞ *these portable, vertical mills for solidity and good workmanship, economy and adaptability.* ☜

EDWARD HARRISON, NEW HAVEN, CONN.

Serviceable Silver-Plated Ware.

"Silver Steel" and "Albata" Silver-Plated.

Save the retailers and jobbers profit, and buy direct of Manufacturers at Wholesale Prices.

An opportunity is now given to buy any of the silver-plated ware manufactured by us direct. The goods are made of good durable metal and will wear for years.

These are not cheap brass goods, like the so-called "Premium Silver Ware," with which the market is flooded, but are warranted as represented. **Remember, brass goods are poisonous!**

Any of these goods sent by mail or express, prepaid, on receipt of the price.

6 Table Knives, solid steel handle and blade (welded), all silver-plated	$2.50
6 Desert or Tea Knives, all silver-plated	$2.00
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1 Gravy Ladle (8 in. long), Albata, silver-plated	.75
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(See illustration, which shows style of last two mentioned articles.)

The entire set (50 pieces)..........$9.50

When desired, Initials will be stamped on, for 20 cts. per set.

All sums over $1 should be sent in Registered letter.

Address **STEVENS BROS. & CO.,**
Manufacturers, Northford, Conn.

GOODELL COMPANY,

Sole Manufacturers of Saratoga Potato Peelers & Slicers, Bay State Potato Parers, Bay State, Mammoth Bay State No. 1, Mammoth Bay State No. 2 Paring, Coring & Slicing Machines, Turn-Table & Lightning Apple Parers, Lightning Peach Parers, Family Cherry Stoners, Cahoon Broadcast Seed Sowers, &c. **Antrim, N. H.**

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BROWN'S FRENCH DRESSING

will make Ladies' and Children's Boots and Shoes that have become rough and red, and Ladies' Traveling Bags which look so old and rusty that they are ashamed to carry them, look just as good as new. It will not rub off or smut when wet. Softens the leather.

No lady will be without it after one trial. Beware of imitations and counterfeits. For sale everywhere.

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A FASHIONABLE CORSET,

Constructed in strict accordance with **Anatomical Law,** Superior to any corset of American or Foreign make, sent post-paid on receipt of $1.50, and your size—Guaranteed! Agents wanted. Send stamp for circulars.

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BARLOW'S INDIGO BLUE.

THE FAMILY WASH BLUE.
D. S. WILTBERGER,
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Keep's Custom Shirts made to measure.
The very best, 6 for $9, delivered free everywhere.
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An elegant set of Gold plate collar and sleeve
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Samples and full directions mailed free to any address.
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NORNY'S
Fruit Preserving Powder

Is tasteless, and preserves all kinds of fruit, either with or without being air tight. This powder has been used for the last seven years in all the States of the Union, with perfect success. It retains a finer flavor than any other process. Price, 50 cents a box, which preserves 60 pounds of dressed fruit. **Three boxes for One Dollar.** Sent by mail, to any address, with full directions. Usual discount to the trade.

JOHNSTON, HOLLOWAY & CO.,
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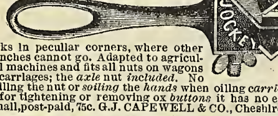
500 AGENTS WANTND Immediately, to sell very desirable NEW PATENT articles, and the new combined VICE and **JOCKEY WRENCH.**



Works in peculiar corners, where other Wrenches cannot go. Adapted to agricultural machines and fits all nuts on wagons and carriages; the *axle* nut *included.* No handling the nut or *soiling* the *hands* when oiling *carriages,* and for tightening or removing ox *buttons* it has no equal. By mail, post-paid, 75c. G.J. CAPEWELL & CO., Cheshire, Ct.

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MONEY *Made rapidly* with Stencil and Key Check Outfits. Catalogues and Samples FREE. S. M. SPENCER, 112 Washington St., Boston, Mass.

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This water-proof material, resembling fine leather, is for outside work (*no tar substances used*) and inside, instead of plaster. Felt carpetings, etc. Send for circular and samples.

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Extra Quality Clocks.

NEW HAVEN, CONN.
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Manufacture various special novel and tasteful styles of

DETATCHED
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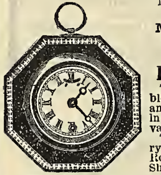

The Boudoir.

They have substantial and durable metal movements, with balance wheel like a watch; will run in any position, and are of especial value to the traveller.

They are suitable for the Library, the Family Room, the Dining Room, the Sleeping Room, the Shop, the Store, and the Cabin, and any place where correct time is desirable.

The "St. Nicholas," imitation morocco, (4½x4)	$2.00
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Accuracy and Durability Guaranteed.

Carefully packed and sent safely by mail, post-paid, on receipt of price.

THE CELEBRATED
Dexter Spring

Is one of those inventions that commends itself to the **PRACTICAL MAN** as the **COMMON-SENSE SPRING,** being a side-spring without the unpleasant and dangerous side motion of the Concord, and obviating the jerking of the Elliptic. Being without perch, gives independent action to each wheel, making them much more durable. The **SPRINGS** are made of special **CRUCIBLE STEEL,** and are fully warranted.

The **DEXTER** supplies a want long felt by the **Farmer, Business Man,** and **Physician,** as it gives them the easiest riding and most durable **SPRING VEHICLE** known, and much less liable to break than the ordinary spring, on account of quality and form.

Please examine carefully the editorial and advertisement in Dec., 1876, *American Agriculturist,* and send for circular to

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AUTOMATIC WAGON BRAKE

The most powerful self-acting brake made, and yet is more simple and complete than any ever introduced for general use. The Brake has been fully endorsed by every farmer who has seen it operate. W. A. Armstrong, Sec'y Elmira Farmers' Club, writes: "A Committee of the Elmira Farmers' Club, consisting of Chas. Heller, John Bridgman, D. T. Billings, S. M. Carr, and M. H. Thurston, gentlemen fully competent to make intelligent judgment, gave the brake careful trial Aug. 21st, and reported unanimously: It is the best brake we have ever seen—prompt in its action—effective when required, and is exceedingly desirable for all farmers on hilly farms." See Illustration in Aug. *Am. Agriculturist.* Town, County, and State rights for sale. Please say where you saw this.

D. L. MULFORD, General Agent,
TIOGA, TIOGA CO., PA.

For FARMERS.

Best Tempered Cast-Steel.
Retail Price, 9 Cents per lb.
WARRANTED. ☞ Send for Circular.
Fisher & Norris, Trenton, N. J.
ALL SIZES, from 10 lbs. upwards.

PAINT.

Use None but the
AVERILL PAINT

MIXED READY FOR USE.

Received the Highest Award at the Centennial Exhibition.

"The paint I got from you four years ago looks as fresh and glossy as if put on last fall."
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MADE WITH THE
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For sale by leading Hardware Dealers.

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BUTTER CARRIER

with a **CUP** for every print or pat, will enable you to market your butter in the best possible condition. All sizes and forms of Box and Cups made. Price $10 for a 48-pound carrier, with center Ice-box. Send for Circular. See advertisement with cut in June No., page 238.

E. L. RESH, Lancaster, Pa., Sole Manufact.

BUTTER WORKER.

The most Effective, Simple and Convenient Yet Invented. **Works 30 lbs. in less than 5 minutes,** thoroughly working out the buttermilk and mixing in the salt. Send for circular and price lists.

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Rice's Patent Spring Brace.

"THAT ALTERS THE CASE."

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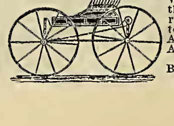

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 249.

Roots for Sheep.—"W." We prefer mangels to ruta-bagas for sheep. A larger crop can be grown of the former and with less trouble. They are as nutritious and healthful as ruta-bagas.

Remedy for a Hard Milker.—"G. T. P.," Dryden, N. Y. When the orifice of the teat becomes partly or wholly obstructed, it may be opened by an instrument specially made for the purpose. This consists of a small tube in which a fine lancet point is concealed; it is pushed into the teat, until it meets the obstruction, when the point is forced out of a slit in the side of the tube, by pressing a spring and by pushing the tube the obstruction is cut through. If the obstruction is at the lower part, a small plug of bone, larger in the middle than at the ends, and having a button or knob at one end, to prevent it from going too far in, may be pushed into the teat and left there. After a few days the stricture will probably disappear.

A Standard of Excellence for Swine.—"W. F. McI.," West Point, Ga. The proceedings of the Swine-breeders Convention, contains the accepted standards of excellence of all the acknowledged breeds of swine. We believe no copies are for sale. The Berkshire Record, Vol. 1, contains the description of the Berkshire breed. This book can be obtained of A. M. Garland, Secr'y, Springfield, Ill.

Foolish Statement Concerning Preserving Corn-Fodder.—One of the most astonishing instances of the ignorance and gullibility of "agricultural editors" who know nothing of agriculture, is given of late in the wide circulation by copying by agricultural and scientific papers, of a statement about growing and preserving of corn-fodder by a person in Maryland, which first appeared in the "Weekly N. Y. Tribune." After reciting some impossible and unfounded "experiments and results," among which it is said: "The cost of producing this fodder was only about $1 a ton, which is only one-twentieth as much as the cost of Timothy hay, *which is not equal to it in any respect,*" the following absurd and false figures are given, viz.: The advantages of this method is best shown by a comparison between the cost of production of this fodder and the cost of Timothy hay:

Phosphates, 10 acres, at $16	$160
Team and plough for 30 days	60
Man to tend the team	15
Cutting	15
Hauling and preserving	250
Total cost	$500

"A fair estimate of the crop of these ten acres would be 500 tons. Five hundred tons of Timothy hay would cost $10,900, and as this 500 tons of chopped fodder will answer the same purpose as the Timothy hay, it is easily seen that every community can thus raise his own meat at about half the cost to import it." It is unnecessary to point out the folly of this statement, the comparison of green fodder with dry Timothy hay and the impossibility of cutting 500 tons of fodder for $15, or the hiring of a man to tend a team for 30 days for $15.

Nets for Poultry.—"F. C. B.," Bristol Co., Mass. The nets used for herding sheep, would answer very well for confining poultry, or protecting gardens from them. The cheapest kind is imported, and may be procured, we believe, of R. H. Allen & Co., N. Y.

Breeding an Old Mare.—"J. S.," Nova Scotia. A mare 18 years old, that has never had a colt, would probably have no difficulty in foaling, but there would be some doubt of her breeding at that age.

To Find Bee Trees in the Woods.—"E. P.," Topeka, Kansas. Bee trees may be found by trapping the wild bees in small boxes, which have been smeared with honey. The bees are attracted to the boxes by burning some paper which has some honey rubbed upon it, in the woods where they are found. The trapped bees are let out of the box one by one when they are filled with the honey, and the direction of their flight is observed. This is followed until the tree is found. When loosed from the box, the bees rise to the tops of the trees, and then dart off in a "bee line" for their hive. It requires skill to keep track of the bees in their flight.

Ringworm in Cattle.—"G. F. P.," Ringworm consists of a round scurfy spot, generally appearing about the head—probably because animals are apt to rub the head on posts, fences, and trees—from which the hair falls off. These spots when rubbed, bleed and become sore. The cause is a minute fungoid growth which is communicated from one animal to another, and thus produces a contagious disease of the skin. The remedy is to rub these spots with an ointment of lard and carbolic acid, (4 oz. of lard to 1 dram of acid), twice a day. Rubbing posts and fences become infected and will give the disease to other cattle, thus spreading it very widely when once it appears.

Hight of Spring House.—"C. F. J.," Leavenworth, Kansas. A spring house that is 5 feet under ground should be at least 7 feet above it. It would be well to have the building 10 or 12 feet high above ground, with an upper apartment, which would make the lower one much cooler than otherwise.

Corn in Canada.—"J. K.," Greensville, Ont. Corn, of the kinds grown in Indiana, will not ripen in Canada, as the season is too short and cool. A very good kind of corn for planting in Canada, or for late planting in the Northern States, is the "Early Canada," a small, but fairly prolific. 8-rowed, yellow variety. We have grown this kind for fodder, in rows 2 feet apart, and the seed one foot apart in the row, planted on the 21st of June, which gave a very fine crop, with ripe ears, and stalks 7 to 8 feet high, very suitable for foddering by being cut up, stalks and ears together, and fed dry or steamed.

Are Stanchions preferable to Stalls?—"J.," In the opinion of the writer, stanchions are in every way preferable to stalls. The prevalent idea that cows are uncomfortable in them is unfounded; the fact that they are safe and cleanly kept is far more important than the consideration whether the cows would choose to be tied with chains or confined in stanchions. We have not yet heard a single objection against stanchions that should weigh in the least against their convenience and safety.

Sawdust for Bedding.—"W. B. S.," Manchester, Vt. Hard wood sawdust not only makes excellent bedding, but when decomposed with the manure, it is useful as a fertilizer, especially upon clay soil. Pine sawdust is not so good, and on light sandy soil is objectionable, as making it still lighter. For clay soils there is no objection to pine sawdust or even shavings.

Stiffness in a Mare.—"H. H.," Benton Co., Ind. The stiffness of the hind quarters, the swelling of the udder, disarrangement of the urinary functions, feverish condition and pain, are all very prominent symptoms of the existence of renal calculi or stones in the kidneys. Sometimes these are formed of considerable size, a number in our possession being from the size of a pea up to that of a pigeon's egg, and of very irregular surface. If blood is seen in the urine, or if on examining it with a microscope crystals are seen in it, the presence of this disease may be considered certain. There is no cure. Some palliatives may be used, such as to keep the bowels loose and the action of the kidneys and bladder easy by laxative food and demulcent mashes or drinks. Linseed meal, oat meal and chopped carrots will be proper food, and when the pain is severe, a drink of sweetened gum water with half an ounce of tincture of opium, (laudanum), may be given. If a purgative or diuretic is needed, give a pint of linseed oil, or olive oil, but no salts, saltpeter, or rosin.

Treatment of Pleuro-pneumonia.—"J. F. S.," Londonderry, N. H. The period of incubation, or of attack after exposure, of the contagious disease known as pleuro-pneumonia, is from 14 days to more than a month. An animal is not accounted safe until after six weeks from contact with infected cattle. The first stage of the disease is an increased temperature, only to be discovered by applying a thermometer to the mouth or the fundament. This may last several days before any further symptom occurs, and if discovered, treatment is now the most effective. An increased secretion of milk is often observed in this period with cows. The temperature of the animal rises to 103 or 104 degrees, instead of 100 to 101 degrees. A shivering fit may occur in this stage. When these symptoms have been observed, sick animals should be isolated, and all others closely watched. The most certain treatment is to slaughter infected animals at once, as danger to others is avoided, and disinfect the stables by the plentiful use of carbolic acid or burning sulphur. Otherwise the sick animal should have one pound of Epsom Salts, and an injection of a solution of 1 dram of Carbolic Acid in two quarts of warm water. This should be followed by doses of half-an-ounce of Hypo-sulphite of Soda, morning and night, for several days. If this treatment is of no avail, and the succeeding fever sets in, with discharge from the nose and frothing at the mouth, the chances of cure are so small and few, and the danger to other animals so great, that the best course is to slaughter the animal and bury it under at least 3 feet of earth, with a load of quicklime all around the carcass. A very wise precaution would be to have some law enacted to provide for the destruction of all infected animals, and partial compensation to the owner from the public revenue. This would be the cheapest way in the end to treat this dreadful disease, which has cost the English people fifty millions of dollars in the past few years.

Protecting Winter Wheat.—"A. J. M.," Waukegan, Ill. The use of straw, or coarse hay, as a mulch for protecting winter wheat during the winter, is advisable. But care should be exercised lest too much straw may be used, and the wheat smothered. Six inches of straw would be too much. One inch would be enough. The object should be to protect the soil from thawing repeatedly, during the winter, as it is the frequent freezing after thawing, which destroys the wheat.

Sheep for Wool and Mutton.—"W. W.," Marshall, Minn. A pure Cotswold would probably be the best ram to use on a flock of native and grade ewes, when wool lambs and mutton are all desired. In feeding unthrashed oats, we have found that the straw was greatly wasted; the sheep eating only the heads and leaving the straw. On thrashing the oats, and feeding the straw in racks, it was eaten up nearly clean, and then the grain was fed by itself. This plan prevented the waste and kept the sheep much more quiet at feeding time.

Gladwin or Gladwyn.—E. Oswald. This is the common name, also written Gladdon, Gladen, and Glader, for a species of Iris or Flower de Luce, a native of England.—*Iris fœtidissima*, so named as its leaves have an unpleasant smell when bruised. The flowers are usually purple, and not especially showy, the plant being cultivated for its seed vessels, which open when ripe, exposing the orange or scarlet seeds, and are used for Christmas and other decorations. Your other question can not be answered in the paper, and the omission of the address prevents answering by mail.

The doings of a Nameless Cow.—Mrs. M., of Vineland, N. J., writes: "The paper enclosed is a 'Milk measure.' I have no lactometer, but after reading about 'Maggie Stewart,' concluded to improvise one out of a glass preserve jar. I give the measure of the result, the length of the paper indicating the depth of the milk, the notch the cream. Our cow has no name, no portrait, no blood, and came from nowhere—as anybody knows of; is a good feeder, (especially of salt), is *not* quiet, but full of fun, enjoying herself finely in a 7x9 barnyard, never stabled, never curried, never ill-used, never petted and fondled; she never holds up her milk, and never gets angry; her cream makes splendid yellow butter, without artificial coloring, in five minutes churning. I do not doubt Mr. Crozier's statement, but a little home observation and *measurement* may be found very satisfactory to the poor small dairy-woman, ready to give up in despair at the wonderful 'blooded stock' results."—Our friend's measurement would have been more satisfactory had her jar been taller and narrower; as it is, the measure shows 22 per cent of cream, which, whatever may be said of the cow's other characters and qualities, is by no means negative.

Cure of Fistula.—"W. J. T.," Warren Co., Ky. Fistula cannot be cured without the use of corrosive substances, by which the pipe is destroyed. There may be cases in which the knife may be used to open the pipes and cut loose the diseased growths within the fistula, but then some corrosive substance, such as arsenic or other mineral acids, are used to eat these away.

Pekin Ducks.—H. Terrell asks certain questions about Pekin ducks, which are disparaged by some breeders of good reputation. Nothing is more common than the disparagement of famous breeds of cattle, horses, and fancy stock of all kinds. In some hands the best stock will run down in a few generations, and become little better than scrubs. A well known breeder of Pekins, who has raised them for four years, side by side with Rouens, Aylesburys, and Cayugas, says: "The Pekins easily maintain their supremacy over the other varieties. They not only look larger, but weigh heavier, taking the flocks through at the same age and under the same treatment, which is the true test of excellence. In my flocks the Pekins will run two pounds a pair heavier than Rouens and Aylesburys, and the difference is still more marked between the Pekins and Cayugas. The Pekins are not only larger, but they are far more hardy and more easily raised. They lay on the average twice as many eggs as either of the other varieties. The real merit of the Pekins is proved by the demand for them. Although I have all four varieties advertised and sent out in my circulars the last two years, and have bred from the best stock in the market, there has been very little demand for anything but Pekins, of which I have sold at least ten times as many as of all the other varieties put together. The experience of my neighbors, who have bred Pekins, is similar to my own. They are driving the other ducks out of the market, and this may be the secret of the disparagement of the Pekins by some of our breeders."—We give this testimony for what it is worth. We have no reason to doubt that the Pekins are sustaining their reputation as the largest, most prolific, and profitable ducks.

Will Grubs in the Head Kill Sheep?—"S. J." Chatham Center, N. Y., sends some grubs taken from the head of a sheep that died, as a proof that the grubs were the cause of death. This is not likely, as four grubs of this kind would hardly trouble a sheep. As the sheep ran at the nose, and would neither move nor eat, the cause of death was probably pneumonia. When grubs trouble sheep, they hold their heads down and snort violently, and stamp with their fore feet. If grubs were fatal to sheep, there would scarcely be a flock surviving, for the majority of sheep carry them in their heads.

The Time to Cut Chestnut Timber.—"J. B. W.," Hartford, Conn. The time for cutting depends upon whether it is desired that the Chestnut stumps should sprout or not. Chestnut cut in the winter, will sprout from the roots, and in a few years will be ready to cut again for posts and rails. If cut in July or August, it will not sprout, but it is said that the timber is more durable than when cut in the winter. This, however, we can not vouch for.

Preservation of Eggs.—"J. F. B.," Chanute, Kansas, and several others. The most effective preservative for eggs that has yet been proposed, is linseed oil, or cotton-seed oil may be used instead. By carefully coating *fresh* eggs with either of these oils, and packing them, small end downwards, in any dry, porous substance, that is a non-conductor of heat, such as chaff, cork-cuttings, or maple sawdust, they have been kept in perfect condition and without loss of weight for 6 months.

Artificial Hatching of Eggs.—"G. A.," Paterson, N. J. In the *American Agriculturist* of July, 1876, was an illustrated article with full information about the hatching of eggs in incubators. A little book, "The Poultry Farm and Market," price 75 cents, published and sold by the Orange Judd Co., contains a full account of artificial incubation.

Paris Green and the Potato Bug.

There are some parts of the country, mainly in New England, in which the Potato-bug has to be fought for the first time, and in these, as well as elsewhere, the propriety and safety of using Paris Green to destroy the insect are discussed. One or two persons, of some scientific reputation, have condemned the use of all mineral poisons as dangerous, but propose no substitute.

Tho question is one of great importance, and had we any doubt of the propriety of using Paris Green, we should feel it our duty to express it. The facts are these: No other poison than Arsenic in some form is effective, or applicable on the large scale. Paris Green (Arsenite of Copper) is the best form in which Arsenic can be applied. It is a deadly poison, and is widely known as such. Moreover, its color is an element of safety, as it serves as a warning, and for this reason, if for no other, this is preferable to any colorless compound of Arsenic. All the danger attending its use is due to careless handling and keeping. It does not poison the potato by being taken into the circulation of the plant. The tests for arsenic are among the most delicate of those known to chemistry, and repeated trials, where excessive quantities of the poison were purposely used—many times more than are applied in practice, have failed to show even a *trace* of Arsenic in the tuber.

Fears have been expressed that the soil may be poisoned and thus rendered unfit for future crops. The amount used is so small, only a fraction of a grain to the cubic foot of soil—that were it unchanged, its presence would not be appreciable, but it is well known that it is decomposed by the iron in the soil, and rendered inert, and under some conditions converted into a gaseous compound, and disappears in that form. The poison has been used now for six years or more, each year in increased quantities, so that the annual consumption amounts to tons, yet there is yet no authentic case of any injury resulting from poison communicated to the tuber.

The great danger to be apprehended is from carelessness in handling, and want of knowledge of its highly dangerous qualities. Let it always be marked Poison.

METHODS OF USING THE POISON.

The poison is applied in the dry state, diluted with flour or plaster in varying proportions, some using only 10 parts of flour or plaster to one part of Paris Green, while others use as much as 40 or 50 parts. One to 24 or 30 of the divisor is most common. Flour, the poorest will answer, is preferable to plaster, as it causes the poison to adhere, which is a great advantage. The application is made while the vines are wet with dew. The chief objection to the dry method is the danger of inhaling the dust, and the difficulty of mixing large quantities, so as to have the poison equally diffused throughout the whole. The mixture will be more thorough if only small quantities are operated with at a time.

Applied with water. Paris Green is not soluble in water, but is only diffused through the liquid, and in a short time, if at rest, will completely settle. Molasses, or thin paste, are sometimes added to the water to hold the powder longer in suspension, and also to cause it to adhere to the leaves when the water has evaporated. A tablespoonful of Paris Green to a 10-quart bucketful of water is the usual proportion. This method is regarded as easier of application than in the dry state, can be done at any time of day, and there is no danger of inhaling the poison. Last year we used a large tin watering pot, the same as used for watering plants, holding about two pailsful, with a fine rose or sprinkler, putting in a heaping tablespoonful of the powdered Paris Green, and keeping it diffused by shaking the vessel frequently. The fluid was sprinkled only on those vines having bugs or larvæ on them. In this way we effectually conquered the pest, and had a full crop of potatoes.

MEANS OF APPLICATION.

The dry powder can be readily applied on a small scale by an extemporized duster made from a wide-mouthed bottle, or fruit can, attached to a stick, and a piece of muslin tied over the mouth. Where there is much to be done, ease of application, economy of material and thoroughness of distribution, are to be considered, and some of the many distributors or dusters will be required. We have figured and described a number of them in former volumes. One of the most useful of these was given in August last. A broad-bottomed saucepan, such as are used in restaurants for stewing oysters, with perforated bottom and a long handle, is very efficient.

J. Thorniley, of New Britain, Conn., sends a distributor which he finds very useful; it is a shallow tin pail, with perforated bottom and long bow bail, to be used with a circular motion, given by a half turn of the wrist. Still another, called the "Safety Paris Green Duster," is made by the Safety Poison Duster Co., 55 Beekman St., N. Y. The principal feature of this is a guard or apron which surrounds the perforated duster and thus prevents scattering. We have not yet been able to try these.

For application in the liquid form, an old broom or whisp will answer on a small scale, but for larger quantities some kind of a sprinkler is needed—and several are now in the market. The Spray Machine, invented by W. P. Peck, West Grove, Pa., is highly commended by those who have used it. The liquid is carried in a can attached to the back, and forced out by a current of air supplied by a bellows, which is operated by a crank, with one hand, while the other hand directs the nozzle which delivers the liquid in a fine spray.

The New York Horticultural Society.

The Spring Exhibition was held at Gilmore's Garden, May 29th, 30th and 31st, and quite equalled the exhibition of 1876, although restricted mainly to flowers, the show of strawberries and other fruit being held separately on June 13th and 14th. The successful competitors at the Spring Show were as follows: Geo. Such, South Amboy, N. J., took the following prizes: for best 10 variegated-leaved plants; the best single specimen of variegated-leaved plant; the best 12 varieties of Ferns; the best single specimen Fern; the best 10 Palms; best 6 Stove Plants; best 10 Orchids....James Riddle, Inwood, N. Y., carried off the premium for the best single specimen Dracæna; for Moss Roses in pots, and a special premium for a beautiful urn-shaped design of living plants, arranged in the ribbon style of planting.....To Isaac Buchanan, Astoria, L.I., were awarded prizes for the best 6 Ferns; the best 12 Azaleas; the best specimen single Orchid, and best 3 Orchids....S. B. Parsons & Sons, Kissena Nurseries, Flushing, N. Y., took prizes for the best display of Rhododendrons and Azaleas; for the best 10 varieties of Rhododendrons and Azaleas, and also for the best collection of Evergreens and Japanese Maples. ....To Charles Zeller, Flatbush, L. I., was awarded the premium for the best 12 varieties Monthly Carnations. ....John Henderson, Flushing, L. I., had the best 12 Verbenas, the best 12 Pelargoniums, and the best 12 Zonal Pelargoniums, and of course took the prize in each class....Peter Henderson, Jersey City, N. J., was awarded for the best 6 Fuchsias; the best 6 Tricolor Pelargoniums; best single specimen ditto; for best 6 Chinese Primulas; the best collection Pansies, and the best collection of cut flowers....H. Reynolds, Flatbush, L. I., had best 6 Zonal Pelargoniums; the best 6 double Pelargoniums, and the best single specimen ditto....William Ball, Spuyten Duyvil, N. Y., was successful with the best single specimen Zonal Pelargonium, and a group of Bedding Plants....S. B. Symes, Tarrytown, N. Y., easily had the best collection of Cape Heaths, as well as single specimen Heath.....John Cadness, Flushing, L. I., deservedly took a prize for the new white Hydrangea, "Thos. Hogg."

Walter Reid, 1286 Broadway, New York, had the best Wardian Case of Plants, the best Fernery and Hanging Baskets, and was awarded for each... ..Kretchmar Bros., Flatbush, L. I., were given a special premium for a group of double and single Petunias, and a new seedling Geranium....To Wm. Bennett, Flatbush, L. I., was also adjudged a special premium for a collection of Fancy Pelargoniums, and a collection of ornamental and variegated-leaved plants......A special premium was awarded to John Bush, Tremont, N. Y., for a fine collection of Stove and Greenhouse plants, and the same to Wm. Wilson, Astoria, L. I., for a similar collection..... A special premium also went to F. Rosenbeck, Bayonne, N. J., for a group of Begonias of the "Rex" section.

William A. Burgess, Glencove, L. I., as last year, distanced all others in the way of Roses, taking the prizes for the best display; for the best 12 blooms Mareschal Niel, and the best 12 Hybrid Perpetual Roses....R. B. Parsons & Co., Flushing, L. I., had the best 12 hardy Azaleas, and took the prize....Thos. Hogg, Yorkville, N. Y., exhibited cut flowers of Magnolia hypoleuca, and was awarded a special.

Frederick Gordon, 26 Broad St., New York, had the best basket of cut flowers, and took the prize in that line....A. McConnell, 733 6th Av., New York was awarded for the best pair of hand Bouquets....Mrs. W. I. Davidson, Brooklyn, N. Y., took the lead for best funeral design in flowers, and best Button-hole Bouquets..... To I. G. Beauchamps & Sons, 85th St., New York, the prize for best design in cut flowers.

John Finn, Tremont, N. Y., had the best 6 bunches, and John Egan the best 2 bunches of Hot-house Grapes.

B. K. Bliss & Sons, 34 Barclay St., N. Y., were awarded for best collection of Potatoes. The "Snowflake" attracted particular attention....The best collection of Vegetables was shown by Geo. Tait, Inwood, N. Y., and took the prize....Edward Huckins, Mt. Vernon, N. Y., had fine specimens of forced Peaches and Nectarines, worthy of a premium....Chas. Atkins, Inwood, N. Y., received an award for a brace of finely grown "Telegraph" Cucumbers.

The Report of the Special Exhibition of Strawberries and Roses, held on June 13th and 14th, comes just too late to be given this month. The exhibition was highly successful, and surprised the managers by its extent and variety, and the prizes were widely distributed.

What is a Thorough-bred?

Prof. G. E. Morrow, of the Illinois Industrial University, writes: I have no wish to be considered overly critical, nor given to pointing out distinctions without differences; hence must ask you to reconsider your decision that there is no difference between a thorough-bred Short-horn and one having five crosses of pure bulls. So far as the United States are concerned, animals imported from Great Britain are considered entitled to record in our American Short-horn Herd-books, if they have four or five crosses. Years ago American-bred animals, with even a less number of crosses, were recorded, but now this is not the case, and the reason the question is one of importance is, that there are thousands of animals in this country which have five or more crosses of pure-bred, at least recorded, bulls, yet which are not eligible for entry in either of the American Short-horn Herd-books. The intrinsic value of these animals is not affected by this fact, but their selling value is greatly affected by it, as they are not regarded as thorough-bred by breeders. As a matter of personal opinion, I do not like the American rules, believing it would be more just, and a help to the more general introduction of improved stock, if not only in the case of Short horns, but also in that of all classes of cattle, a fixed number of crosses, and I would be content with five for cows, should entitle an animal to record, and to be considered as a full-blood, pure-bred, or thorough-bred—the terms being synonyms, as used by breeders of Short-horns. There are no thorough-bred cattle of any of our improved breeds, if we insist on a literal definition of the word. Whenever an animal possesses the distinctive characteristics of a breed, and uniformly transmits them to its offspring, it is entitled to membership in that breed; and five crosses, as a general rule, give this possession and power of transmission. Many prominent British herds of Short-horns have been built up on a foundation of good cows, without pedigree, and sometimes without Short-horn blood, by the continued use of pedigreed bulls. If such a rule existed here, as does in England, with regard to recording Short-horns, many farmers would be encouraged to begin a course of systematic good breeding, who do not now, because they see that, however many crosses they put on their present stock of cows, the progeny will still rank as only grades. But my opinion does not change the facts, and if any one buys an American bred cow, having five Short-horn crosses, and not running to an imported animal on the dam's side, he will not be buying a "thorough-bred" as the word is interpreted by the editors of the Herd books or the breeders of Short-horns.

[We do not see, so far as the English Herd-book is concerned—and to that extent the American Herd-book is also involved—that there is any difference between a thorough-bred Short-horn, and one having five crosses. If five crosses, with the limitation that it must be an imported animal, entitle to entry in the American Herd-book, then five crosses make an animal a thorough-bred. Why a rule that is good enough for England is not good enough here, is difficult to understand, unless on the principle that "a prophet is not without honor save in his own country," etc. The restriction against the admission of native-bred stock of five crosses, is what we have all the time been protesting against.—Ed.]

The Manufacture of Compressed Meats. —A New Industry.

Many circumstances are conspiring to forward the interests of stock-breeders and graziers. The export of dressed beef and mutton, and of live cattle and sheep is gradually-increasing, and promises, not only to make an outlet for all our surplus stock, but to exert a favoring influence on the steadiness of prices in the home market. A new business is now growing into importance as an element of our foreign export trade, it having already reached respectable proportions in the domestic trade. This is the preparation of compressed, cooked meat, put up in cans of various sizes, from 2 to 14 pounds. This manufacture was begun three or four years ago by the Wilson Packing Co., of Chicago, who prepared fresh and salted beef, beef-tongues, and ham, in conical shaped cans of such a character that their contents could be turned out in a solid, shapely mass, perfectly presentable on the table without further preparation. This prepared meat met a popular want and an extensive demand, but, as might be expected, there was some competition from other manufacturers. Heretofore, canned meats have been put up loosely in the cans, and when turned out for consumption, presented a sodden, disagreeable mass, which was deficient in flavor. The compressed meats, on the contrary, are solidly packed, and free from liquid, and they retain all the savor and fresh taste of the best prepared food. Consequently the consumption of all other kinds than these has almost entirely ceased in this country, while foreign consumers are beginning to appreciate the better quality of these meats. This foreign demand, just now in its infancy, calls for greatly increased facilities for manufacture, and the proportions which this new business have assumed, will surprise those unfamiliar with it. For instance, two Chicago manufacturers, alone, produce 750,000 cans per month, using nearly 4.000 cattle weekly, and employing a large number of men and women. One of the factories referred to, employs 700 men and 150 girls, paying $30,000 monthly in wages, and the floors of their packing house cover four acres. The companies own their own slaughter-houses, and the meat is cut up and selected for cooking under the closest supervision. After the best has been cut up, it is cooked by steam in wooden vats, to prevent any possibility of unwholesome taint from metallic surfaces; and when thoroughly cooked, the meat is drained from liquid, pressed tightly in the cans, and sealed hermetically. It will thus remain in perfect condition for many years, retaining its flavor and succulency indefinitely. The convenience of food thus prepared, for domestic use in summer time, is very great, and it is not surprising, that in foreign countries it meets with a ready sale. Recently we noticed that in one week 11,270 cases of these compressed meats, each case being equivalent to one sheep, were received at Liverpool from the United States. Each case contained twelve four-pound cans, so that this shipment weighed over 500,000 pounds, or 250 tons of meat, free from every particle of inedible or indigestible matter. In some weeks 20.000 cases are exported, so that this was below the average business. It is expected that the present war in Europe and Asia will greatly increase the foreign demand. And this is but one of the new outlets for American meat.

The Best and Cheapest.

BUCHAN'S

Cresylic SHEEP DIP.

Patented May 28th, 1867, Re-issued July 30th, 1872.

A Saponaceous Compound with Cresylic and Carbolic Acid.

For Preventing and Curing the Scab and all parasitic diseases of the Skin. Will destroy Lice, Tics, Fleas, &c.

Is beneficial to the general health and condition of the flock. The use of this **DIP** will cleanse and whiten the Fleece—also increased the growth or weight sufficient to be a full equivalent for the cost of the Compound.

This Preparation is Warranted to be **entirely harmless** and **free from all poisonous** Compounds, and will positively do all that we claim for it. Put up in packages of 1, 5, 10, 50, 100, and 200 pounds.

Buchan's Cresylic Ointment.

Certain Death to the Screw Worm or Grub.

It not only destroys the worms, but cleanses and quickly heals up the offensive sores made by it.

No fly will attack a wound to which this preparation has been applied. Sheep which rarely recover from the attack of the worm under the ordinary treatment, are quickly cured by this application. In solution, this ointment will be found invaluable for healing Saddle Galls, and all abrasions of the skin of animals.

For further particulars, send for price lists and circulars to

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AMERICAN VETERINARY COLLEGE.

INCORPORATED 1875.

141 West 54th St., betw. 6th & 7th Avs.,
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The regular course of Lectures in this Institution will commence on Wednesday, 3d of October, 1877, and terminate late in Feb., 1878.—The Spring course will begin on March and last until middle May.

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COTSWOLD SHEEP & BERKSHIRE SWINE.

Also FANCY POULTRY of choicest kinds, bred from the best stock. Address

J. N. ROBINS, Manager.

Colley Sheep Dogs,

which were awarded the highest Diploma and Medals at the Centennial Exhibition at Philadelphia in 1876.

For sale by **WILLIAM CROZIER,**
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A large, handsomely illustrated Magazine, devoted exclusively to Poultry. Price only $1 per year. Send 10 cents for sample copy to

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we will with pleasure send you a sample copy of our **Monthly GLEANINGS IN BEE CULTURE,** with a descriptive price list of our latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all Books and Journals, everything pertaining to Bee Culture. *Nothing patented.* Simply send your address on a postal card, *written plainly,* to

A. I. ROOT, Medina, Ohio.

HAVE YOU GOT LICE?

on your chickens or fowls, or any other insects troubling you. If so, send 25 or 50 cts. for the **Continental Insect Powder**—the surest cure known. Also Houdan eggs at $2.00, and Spangled Leghorn at $3.00 per doz. Send for Circular. T. L. HALLWORTH, Box 1770, Boston, Mass.

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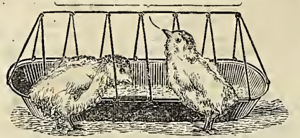
We take our food and drink from Fowler's Economy Dish, it keeps so clean and wholesome.



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Send for Circular. Agents can make money selling them.

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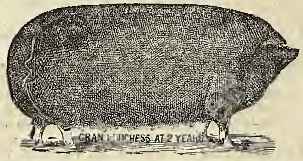

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Importer and Breeder of Improved Blooded Live Stock, Horses, Cattle, Cotswold and Southdown Sheep, Chester, Berkshire and Yorkshire Pigs, Toulouse, Bremen, Hong Kong, White China and Wild Geese, Cayuga, Rouen, Aylesbury, Pekin and Musk Ducks, Bronze, Blue, Buff and White Turkeys, Dorkings, Brahma, Cochin, Guinea and all other Fowl, Deer, Swans, Peacocks, Pigeons, Eggs, &c., at low prices. Best Breeds of Dogs and Maltese Cats, Rabbits, Ferrets, Guinea Pigs, White Mice, &c. Song Birds of all kinds.

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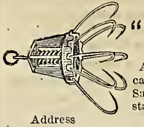

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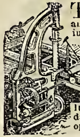

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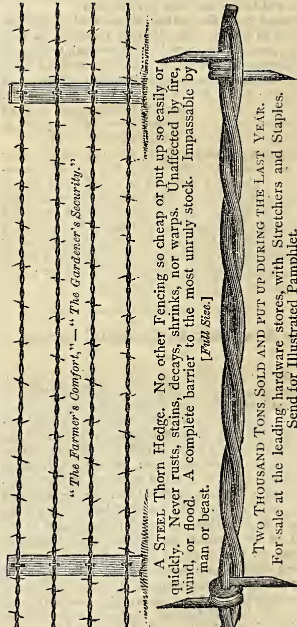
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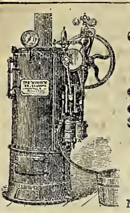

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CLIPPER Vertical Engines, off and on wheels! Price on wheels, 6 Horse Power, $485. 8 Horse on wheels, Price $700. **Dry Steam** Horizontal Engines, 8 Horse Power Climax, on wheels, $925. Builders of Stationary Engines, 4 styles, from 6 to 200 Horse Power. Corlis's Engines, Extra Finish and cut off Engines. Crank Stationary, and Plain Finished Engines, Boilers, Circular Saw-Mills, &c. Successors to Utica Steam Engine Co., formerly Wood & Mann, Established 1857. We have the *largest* line of Engine Patterns in United States.

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Good responsible Agents wanted.

"ECLIPSE" PORTABLE FARM ENGINE.

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Send for Centennial Judges' Reports, and catalogues of Eclipse Engines, Stationary Engines, Boilers, Saw-Mills, &c., to FRICK & CO.,
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It has been manufactured under immediate supervision of inventor for more than twenty-two years.

$3,000,000 Worth NOW IN USE.

A 58 page Illustrated Catalogue with Price List will be sent free to all who make application.

Agents wanted in all unassigned counties.

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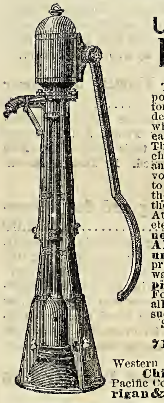

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Secured by letters patent.

These pumps have enormous power, and are for the house or for **out-door wells** of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

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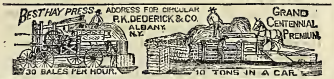
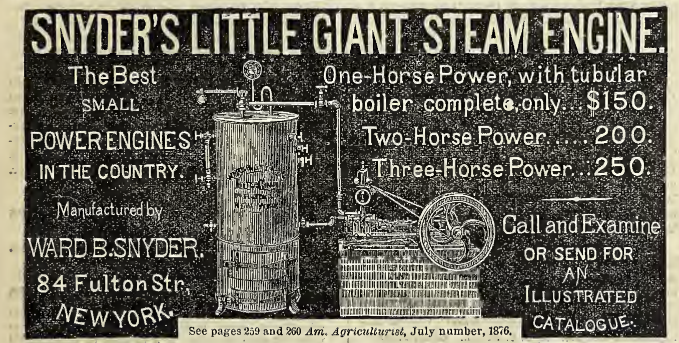
Pacific Coast Agency, **Dunham, Carrigan & Co., San Francisco, Cal.**





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The Best SMALL POWER ENGINES IN THE COUNTRY.

One-Horse Power, with tubular boiler complete, only... $150.
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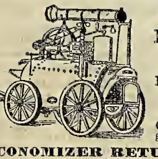

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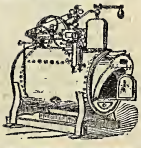
New Apparatus and Furnishings for Cheese and Butter Factories.

Especially approved by Prof. ARNOLD and all who have seen same.

Parties should see us before buying Return Flue Boilers for Cheese Factories, etc.; also, Creamery and milk Vats, as we have greatly reduced prices.



ECONOMIZER RETURN-FLUE BOILERS, FROM 2 1-2 TO 30 HORSE POWERS.

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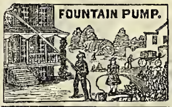
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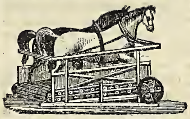

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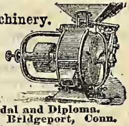

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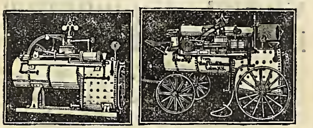

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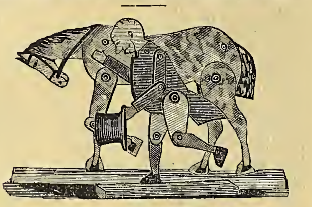

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245 BROADWAY, NEW YORK.

AUGUST, 1877.

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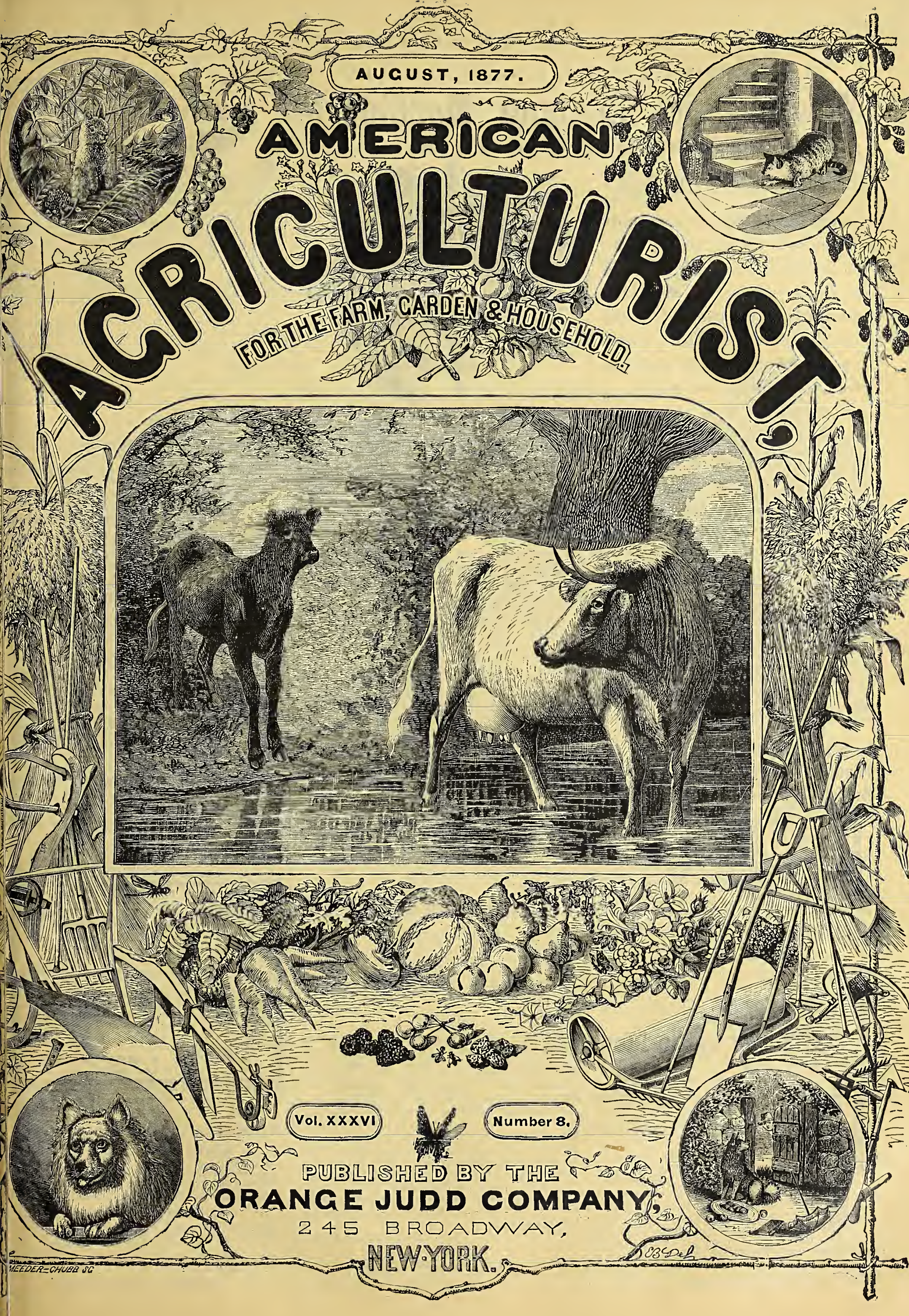

Vol. XXXVI
Number 8.

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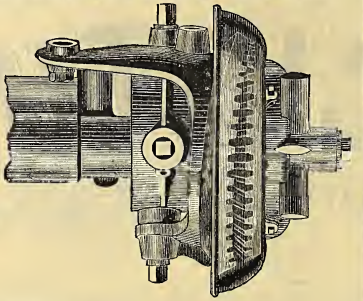

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Farm, Garden & Orchard.

By HENRY STEWART,

Civil and Mining Engineer, Member of the Civil Engineers' Club of the North-west, Associate Editor of the American Agriculturist.

WITH NUMEROUS ILLUSTRATIONS.

CONTENTS.

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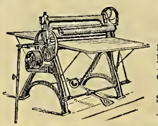

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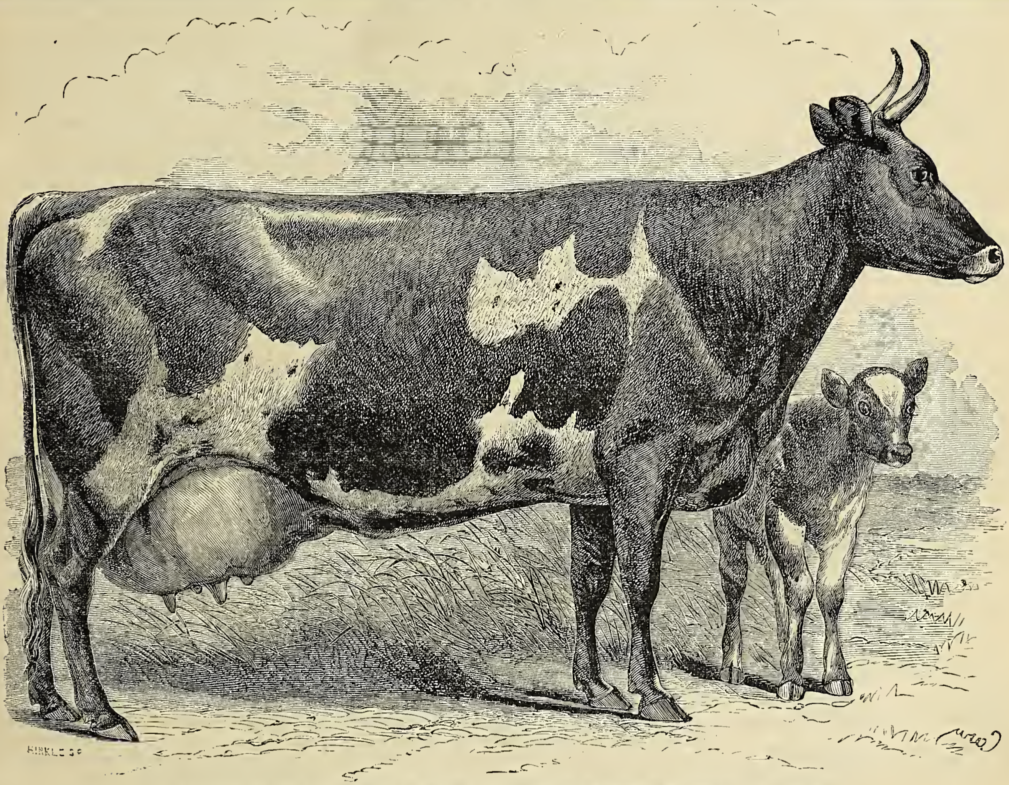

AYRSHIRE COW "RUBY." — *Drawn and Engraved for the American Agriculturist.*

To one who loves a fine cow, breed is of secondary consideration. There are fine cows of all pure breeds, and also excellent cows of no breeding at all, without either name, reputation, or position in the world. If profit only were the consideration in keeping cows, there would still be as great diversity of breeds as there now is, for one breed is better adapted to peculiar circumstances than others. The Jersey or Ayrshire would not pay where a Short-horn or a Hereford would, and a Devon has some useful points which no other cow possesses; nor could a Short-horn be kept with profit where the smaller breeds can be. So that it is not fancy, or fashion, which makes a diversity of races both desirable and necessary. The Ayrshire and Jersey cows, however, come into closest competition as the best dairy animals, and although the Ayrshire takes the palm as a copious milker, yet she has not always the rich milk of the Jersey. The difference between the two breeds may be stated thus: the Ayrshire is useful for all sorts of dairying, and excelling in all but one, viz., that of the production of butter of a high color and fine quality, while the Jersey excels precisely in this one respect, and stands at the head of all races as the "gilt-edged" butter cow. She, therefore, holds a narrower place in public estimation than the other. The Ayrshire just now is not the subject of any popular excitement, and only holds her reputation very quietly. It is probable that this breed may be somewhat unjustly held in the background of popularity. The Ayrshire, however, can very well afford to stand upon its own merits, as these are unquestionable. The cow "Ruby," whose portrait is given above, is a fair representation of a good Ayrshire. She is 6 years old, and was imported about a year ago by her present owner, Wm. Crozier, Northport, Long Island, New York, with several other choice animals, personally selected in Scotland. She has taken three first premiums at Scotch fairs, against numerous competitors, and was awarded second premium at the Centennial, soon after her importation; the successful competitor being another cow, of the same herd, "Maggie Anderson," which was awarded first premium. "Ruby" was one of the prize Ayrshire herd at the Centennial; the judges being seven of the leading Ayrshire breeders in America; the distinction of an award in competition with the choice stock there exhibited, is at least very creditable. "Ruby" is now fresh, with a bull calf by her side, and is giving over 29 quarts of milk in 24 hours, the milk being very rich in cream. Her head is fine, the eye full, ears sharp, neck clean, and fore-quarters fine. Her back is very level, the loins are deep, and the udder runs up well behind, comes well forward, and is broad, the teats being so far apart that, for convenience, she is milked from both sides. Her calf is by "Romah," who is out of imported "Rosie," a prize cow at the Highland show at Perth in 1871. On the sires side this calf has the best Ayrshire blood to be procured, tracing his lineage through several first prize dams at the Highland shows. "Ruby" is recorded in the Ayrshire Breeders' Association Herd Register, and also in the N. A. Ayrshire Herd Record.

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Day of Month.	Day of Week.	Boston, N England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	W	4 52	7 20	10 16	4 57	7 16	10 21	5 1	7 11	10 25
2	T	4 54	7 18	10 44	4 58	7 14	10 52	5 2	7 10	10 57
3	F	4 55	7 17	11 22	4 59	7 13	11 30	5 3	7 9	11 37
4	S	4 56	7 16	morn	5 0	7 12	morn	5 4	7 8	morn
5	S	4 57	7 15	0 12	5 1	7 11	0 20	5 5	7 7	0 28
6	M	4 58	7 14	1 16	5 2	7 10	1 24	5 6	7 6	1 32
7	T	4 59	7 12	2 32	5 3	7 9	2 40	5 6	7 5	2 47
8	W	5 0	7 11	sets	5 3	7 7	sets	5 7	7 3	sets.
9	T	5 1	7 10	7 34	5 4	7 6	7 32	5 8	7 2	7 29
10	F	5 2	7 8	7 58	5 5	7 5	7 58	5 9	7 1	7 57
11	S	5 3	7 7	8 22	5 6	7 3	8 23	5 10	7 0	8 24
12	S	5 4	7 5	8 46	5 7	7 2	8 49	5 11	6 59	8 50
13	M	5 5	7 4	9 10	5 8	7 1	9 14	5 12	6 57	9 17
14	T	5 6	7 3	9 37	5 9	7 0	9 43	5 13	6 56	9 49
15	W	5 7	7 1	10 11	5 10	6 58	10 18	5 14	6 55	10 25
16	T	5 8	7 0	10 49	5 11	6 57	10 58	5 15	6 53	11 5
17	F	5 9	6 58	11 38	5 12	6 55	11 46	5 16	6 52	11 55
18	S	5 10	6 57	morn	5 13	6 54	morn	5 17	6 51	morn
19	S	5 11	6 55	0 33	5 14	6 52	0 41	5 17	6 49	0 48
20	M	5 13	6 54	1 34	5 16	6 51	1 41	5 18	6 48	1 49
21	T	5 14	6 52	2 40	5 17	6 49	2 47	5 19	6 47	2 52
22	W	5 15	6 51	rises	5 18	6 48	rises	5 20	6 46	rises
23	T	5 16	6 49	6 44	5 19	6 46	6 43	5 21	6 44	6 40
24	F	5 17	6 47	7 3	5 19	6 45	7 3	5 22	6 42	7 2
25	S	5 18	6 46	7 21	5 20	6 44	7 22	5 23	6 41	7 21
26	S	5 19	6 44	7 39	5 21	6 42	7 41	5 24	6 39	7 42
27	M	5 20	6 43	7 59	5 22	6 41	8 3	5 25	6 38	8 4
28	T	5 21	6 41	8 20	5 23	6 39	8 24	5 25	6 36	8 28
29	W	5 22	6 39	8 47	5 24	6 37	8 53	5 26	6 35	8 58
30	T	5 23	6 38	9 19	5 25	6 36	9 27	5 27	6 33	9 33
31	F	5 24	6 36	10 03	5 26	6 34	10 12	5 28	6 32	10 19

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
3d Quart.	2	5 37 mo.	5 25 mo.	5 13 mo	5 1 mo.	4 31 mo.
New M'n	9	0 33 mo.	0 21 mo.	0 9 mo	11 57 8th.	11 27 8th.
1st Quart	15	5 44 ev.	5 32 ev.	5 20 ev.	5 8 ev.	4 38 ev.
Full M'n	23	6 26 ev.	6 14 ev.	6 2 ev.	5 50 ev.	5 20 ev.

AMERICAN AGRICULTURIST.

NEW YORK, AUGUST, 1877.

It is some years since farmers could afford to be as complacent as they can be now. Generally this season there has been, and is now, little to complain of. Wheat and rye, and oats, where cut, have done well; if not very well, hay has turned out better than it promised in the spring; potatoes are a good crop in spite of the beetle; fodder crops, corn, and roots, are doing well, and outside of the farm, business is looking up. We have got over the flurry of artificial values; we have come down to "hard pan," and those who are out of debt feel as well as ever. Confidence is returning; it is a wonder that it was ever lost; and if any man in the world should be confident, it is the farmer who is out of debt, and who knows how to use his farm well. Unfortunately there are comparatively few such; but the experience of the past few years ought to add greatly to the number of this class. The great study of the farmer now should be, to add to the capacity of his soil by every appliance known to science. How we have changed during the past few years! No men are now more eager for scientific knowledge than farmers; and years ago the idea that science could do anything for the farm, was scouted by the great majority of them. But what has been done is too plainly seen, and it is too clearly understood now, how much remains to be done before the farmer can say that he is satisfied. We are just beginning to know how to learn. This is the first step in all education, and it is pretty certain that, in the next few years, we shall see a great advance in our system of agriculture and in its profitable operation. Now is the time of our necessity, and necessity being the mother of invention, a way to arrive at the needed end will be soon reached. And the end we need to reach, is simply to bring the productive capacity of the farm to an equality with that of other industries which have, for years past, shot ahead of agriculture.

Hints for Work.

Preparations for Sowing Wheat should be made at once. There was formerly more difference of opinion as to the time of sowing wheat than there is now. The majority of farmers favor early sowing, and if the seed is well in the ground late in August, the chances are more favorable than if it is sown later. Where wheat follows oats, the oat stubble should be plowed immediately after the crop is taken from the field. If the weather is dry, the greater will be the necessity for repeated plowing and rolling, to prevent the soil from baking.

A Mellow Soil, well rolled and packed, is what the seed requires to germinate in. If the soil is cloddy, the young roots are exposed to the action of air in the open spaces, and dried and killed. This is the secret of many failures of what were at first promising seedings. Repeated harrowings and rollings are needed to produce the proper condition of the soil. No matter if the surface is somewhat rough, if the soil beneath is mellow and fine. Indeed, we would rather have the top a little rough.

Drilling is by far the best method of seeding. It costs 50 cents an acre if the drill is hired, and less if it is purchased. Five pecks of seed per acre, or six at the most, is enough, so that at least half a bushel of seed per acre is saved, and here is the cost returned at once. But the difference in the harvest is, many times its cost, in favor of the drill. Every winter we hear and read, on every hand, "drill sown wheat looks well, but broadcast wheat is injured and looks badly." There is much in placing the seed exactly right in the ground. If the plant has no depth of root, it is weak, and can not stand the rigors of winter or spring, and it will not tiller out as will that more deeply sown.

Seed and Seeding.—It hardly need be said that, if the seed is not good, no good crop can be hoped for. The necessity for selecting seed with care has been a maxim of agriculture for thousands of years. The oldest books tell of it. And yet the success of persons, who make a business of doing this, is now made a "nine days wonder." Unfortunately it is forgotten again in nine days, and we go on sowing the seed just as it comes from the sheaf. It is a good plan to sow, at least a small strip in the field, with the best seed to be procured, upon ground prepared in the best way, and cut this by itself at harvest, and thrash it at once for seed. But if this pays, why not grow the whole crop in the same way? A good farmer should have no grain that he cannot use for seed; none that is poor, light, shrunken, or mixed with cockle and garlic.

Rye.—A very general opinion is held in some places, that wheat can no longer be grown; that the climate has changed, or something else has occurred that makes it hopeless, and that rye needs to be sown in place of it. Nothing could be more erroneous. If the ground is well fitted, the seed well selected, and sown in a proper manner, wheat can be grown as easily as ever. We have seen so many examples of this, in different places, that we advise every farmer who has this mistaken opinion, to try at least an acre or two in the manner proposed, in place of rye, which is a much less valuable grain than wheat. When rye is sown, it is worth while to put it in with as much care as wheat; but it is time enough to sow it next month.

Fertilizers.—Some experiments we have made the past season in using artificial fertilizers, have largely increased our confidence in them. Used in place of stable manure upon potatoes, corn, and grass, the crops are quite equal to those grown with the manure. The complete manure, prepared by Chas. V. Mapes, from Prof. Ville's formula, has been remarkably effective with the writer the past season upon all these crops. Where manure is scarce, a dressing of this upon fall sown crops would be beneficial. The use of artificial fertilizers must be increased if we would enlarge our crops.

The Potato Beetle.—It is a short-sighted business to leave the last broods to breed and increase, because the potatoes are past harm. *This is seeding for a crop next year*, which will perpetuate the vermin and make work for another season. If the late arrivals are destroyed, there will be very few another year. If a thorough work were made of this pest for one season by every one who grows potatoes, a very quick end could be made of it.

Potatoes.—Early potatoes should be harvested as soon as ripe. Else, if wet weather occurs, the tubers may sprout and be injured. Rue's Potato Digger is an effective implement, designed expressly for this work, and where the crop is a large one, it can hardly be dispensed with, if the crop is to be gathered and put away as quickly as it should be. There is no other crop that follows potatoes so well as fall wheat, and no ground so easily prepared for it as potato ground. Potatoes may be pitted and lightly covered with the vines, and some boards over these, and remain until frost.

Turnips.—The White Norfolk Globe, or the Cow-Horn Turnip, can be sown upon an oat stubble, if wheat is not to follow the oats. If the ground is fairly clean, the seed may be sown broadcast at the rate of three pounds per acre. But it is better to sow with one of the small hand-drills, in rows 27 to 30 inches apart, when a pound and a half to two pounds of seed will be sufficient. 100 to 200 pounds of guano, or a fertilizer prepared expressly for turnips, should be sown immediately after the seed.

Meadows and Pastures will be greatly benefited by a light dressing of artificial manure. 100 pounds of nitrate of soda, with a bushel of finely ground gypsum, per acre, will work a great change for the better. Pastures should not be used until after a good shower has washed the nitrate into the soil.

Thrashing.—When grain is thrashed, it is safe from the majority of its many enemies. It is also ready to sell at a moment's notice, when the price suits, or money is wanted. Perhaps no further reasons than these need be given, why it is well to thrash as early as possible. One of the most convenient things about a farm is a thrashing machine and horse-power, or for larger farms one of the many good and cheap steam engines, which will be found described in the advertising columns. It is a great convenience to be able to thrash just when one wants to, and without the fuss and bother of a hired machine.

Composts.—All the different waste matters about the farm, and such purchased material as can be cheaply procured, may now be usefully gathered into a heap for a compost for the wheat crop. One of the most valuable materials for a compost, is castor pomace, which can be procured so cheaply as to make it a very desirable fertilizer to be used in this way. It costs only $10 a ton in St. Louis, and as it contains 7½ per cent, or 150 lbs. to the ton, of ammonia, it is the cheapest source of this indispensable material that can be procured for composts.

Weeds.—Gather and put in the compost heap all the weeds that have not yet seeded. Burn all that have ripe seeds. This work should not be neglected. Upon many farms the road-sides, barn-yard fences, and the sites of old grain stacks, are most prolific nurseries for weeds. These should be cleared up at once.

The Swamps are now dry, and work on them should not be neglected. Getting out muck for use in the winter, and digging ditches, can be better done in August than at any other time.

Fall-Fallowing.—As a means of preparing land for spring crops, there is none better than what is known as fall-fallowing. Our drier season makes this as effective in cleaning the soil, as the English farmer's summer-fallow. Two plowings may be given, if necessary, before the winter, and a final deep plowing for the last, will leave the soil in fine condition in spring, for root crops or corn. If any fall-fallowing is to be done, it should be begun at once.

Milch Cows will need some fresh fodder as soon as the pastures have become dry and hard. Those who have provided some fodder crop, will keep up the supply of milk, those who have not, will now regret their neglect. There are some farmers who make more than others, some make but little, but the best might often do a little better, and at this season this truth comes home.

Sheep.—Lambs should now all be weaned, and the ewes fed well for breeding. Next month the coupling season will begin. Nothing is gained, but much is lost, by using a poor ram. A pure bred ram, of whatever kind is chosen, should be procured at once. None less than a year old should be used for breeding. The ewe lambs should be separated from the old ewes, and kept in a good pasture, or otherwise well fed by themselves.

Swine.—Some breeders make a business of having their sows litter in August, so as to get the pigs ready by the holidays for small pork. By proper management, two litters of pigs may be turned off from one sow in the year, the pigs being sold at three to four months old as "market pigs." There is evident profit in this, and because every one does not know how, or care to take the trouble to do this, there is the more profit for those who do. The best work pays best in everything.

Poultry.—As we go about and see the poor mixed lots of fowls in farm-yards, the improvidence of it is too palpable to be overlooked. Where a good breed is kept, and well cared for, the profit exceeds that of anything else on the farm. Now is a good time to clear out poor fowls and procure a few good pullets; after a run on the stubbles, the old fowls will be in good condition for market. Moulting fowls will be greatly helped by a little of the "Imperial Egg Food," which we have referred to already. We have found it very beneficial.

Sundry Matters.—See that the stock, of all kinds, do not want for water. A good force pump and some hose, by which water may be led to a trough wherever it is required, will be found useful. Clean out root cellars, and make them ready for the root harvest. Granaries should be thoroughly well cleaned, and every crevice filled with hot lime-wash, put on very thick. The windows should be protected by wire gauze, to keep out the grain moths and weevils. Save all the straw and chaff for feeding, and use leaves, muck, sand, or earth for bedding; a store of these should be gathered by and by. In spare hours make repairs, clean machines, and remember that the summer is fast slipping away, and the fall, with its rains and storms, will be upon us, and many things that may be done now, can not be done then.

Notes on Orchard and Garden Work.

Last month it was suggested that July and August were the months in which the cultivator could avail himself of the recreation and instruction afforded by travel. Perhaps fruit-growers and gardeners generally, lead less isolated and secluded lives than do farmers, but at best they go about all too little. Next month the fairs will demand attention, and the harvest of the larger fruits will be coming on; hence the present is the most favorable time for a brief vacation. If one has an idea of changing his residence, and moving to a locality that he regards more favorable—and our correspondence shows that there are many such—now is the best time to visit the proposed locality. We do not say that places will show at their best; on the contrary, after the heats of July and August, especially if the usual drouths occur, every place will look at its very worst, and that is the condition in which an intending purchaser should see the place he proposes to make his future home. If he knows the worst, no disappointment can follow. Many a place that in the freshness of spring or the ripeness of autumn seems charming, presents a sorry aspect at the present season. As usual, last month's Notes are to be referred to for many hints that we do not repeat, but which are as timely now as then.

Orchard and Nursery.

If every fruit-grower could go to the market where his fruit is sold, and see his own packages in contrast with those of many other growers, and notice the preferences of the buyers, he would learn a useful lesson. If his own parcels went off well, he would see why this was the case, and study to improve upon their present style; if, on the other hand, his fruit was passed by, and that of another preferred, he would learn that what seem to be trifles have a money value. A new half-barrel, lined with clean, white paper, may contain no better Bartlett or other pears, than his own second-hand package, but his are not touched until all the clean and bright parcels have been taken up, and at a price that much more than covers the difference in cost between the two packages.... We have mentioned the matter of

Assorting fruit, until it is irksome to repeat it; but our daily walks among the fruit dealers, show that a very few of the fruit growers understand, or at least practice, this—one of the easiest methods of increasing their profit. If we insist upon the importance of that which experienced fruit-growers do, as a matter of course, it must be remembered that these Notes are for novices, and those slow to adopt new methods, and must have precept upon precept. It is very easy for one sending fruit to market, to test the

Money Value of Assorting.—Let him try it with pears, early apples, or peaches, sending some packages of fruit as it runs, and the same number of which the fruit has been separated into two qualities, rejecting from the second grade all that is imperfect and absolutely poor. He will be astonished to find that there is but little difference in the returns from his second quality and the unassorted parcels, while the returns from the first quality will show that there is no more remunerative labor than that he has given to them....Recollect that

A Few Poor Specimens will spoil the looks of a whole basket of fair fruit, while many good specimens will not bring up the grade of an indifferent lot. Just as the strength of a chain is that of its weakest link, so does the buyer estimate the fruit by the poorest that are visible. Assorting pays with all kinds, but is especially necessary in

Marketing Peaches, as not only the appearance has to be considered, but the degree of maturity. On page 303 will be found an article devoted to the crop, which the inexperienced may find useful.

Pears.—There is scarcely an exception to the rule that these are much better when ripened off of the tree, and some, unless gathered early enough, will be absolutely worthless; those beautiful pears, Clapp's Favorite and Flemish Beauty—a beauty indeed, where it will grow with a clear skin—are marked examples of this. Hence it becomes a matter of profit that the fruit-grower should know the peculiarities of the varieties he raises.—"There's money in it."

Large Pears are apt to be blown off in gales, and we have known the ground around the trees to be covered with marsh hay, to prevent the bruising of the fruit, the owner finding it profitable; where there is grass, that will prevent bruising; if there is no grass, keeping the soil light and removing all stones, will be of use.

Fallen Fruit should always be utilized; swine may be pastured in the orchard, or the fruit picked up daily and carried to their pens; in case neither is done, some other methods should be adopted to destroy the larva of the codling moth that is commonly within it. Vinegar makers grind and press the windfalls daily, to add to the vinegar crop.

Insects.—The Notes of June and July treat of the principal insects. The traps, cloth being the best, as described last month, for catching the Codling Moth, should be looked to every 10 days. The Late, or Fall Web-worm, a different insect from the Tent-caterpillar, though resembling it in building a web, is common on forest as well as fruit trees, and should be killed wherever found. Cut away the twig upon which the web is found, and crush.

Budding is a method of propagating fruit trees less frequently practised by the farmer and cultivator, than grafting, but the nurserymen employ it extensively, and for some fruits exclusively. In the instructions given in the April Notes, in grafting, it was stated that in that process "we take a piece of a stem, and instead of putting it in the soil, we plant it in the branch of another tree," and that the object in doing this was, "to plant the twigs of a fruit that we know and want, upon the roots of a kind that we know nothing about, or of an undesirable kind."

Budding is a Kind of Grafting, indeed, the French call it "grafting with an eye." In grafting, a twig with several buds is used; in budding, we use but one bud, and the end to be accomplished is the same as in grafting. The old term was inoculate, (from the Latin *in*, and *oculus*, an eye), and is occasionally used at present, but the same term is also used for imparting disease, by inserting the virus into the flesh, as in vaccinating, and many persons think that inoculating a tree imparts to it the power to bear better fruit, while really the bud that is inserted is the starting point of a new tree, all of the stock, or the tree in which the bud is placed, being cut away above the bud.

Grafting and Budding Differ in other points besides that mentioned. In grafting (at least so far as fruit trees are concerned) we use buds of the last season's growth, and expect them to grow the same season we insert them. In budding, we use buds that have been formed the same season, and expect them to lie dormant all winter, and to start into growth the following spring; hence budding is done in summer and early fall.

What are Needed in Budding.—Stocks on which to work; buds, a suitable knife for the work, and material for tying the buds after insertion.

The Stocks are usually small, from one fourth of an inch to an inch thick; peach and plum stocks from seed planted in spring, are usually large enough by mid-summer; slower growing ones will be older. The stock must be in a thrifty, growing state; the proper condition is shown by the bark parting freely from the wood, or as budders say, "the bark will run."

Buds are formed in the axils of the leaves of twigs that have grown the same season. They must be well formed, and of course great care should be taken to get them true to the kind. The suitable twigs are cut, taking care to keep from wilting by thorough wetting. To prevent evaporation, each leaf is cut away, leaving about half an inch attached to the leaf-stalk; as the lowermost buds on a twig are usually very small, and the uppermost not mature enough, both the top and bottom of the twig are cut off. A twig thus prepared is called a "stick of buds," and is ready for use. It must be kept in the shade and cool until used, and in budding the sticks, except the one in hand, should be kept covered and damp.

The Knife.—Budding knives of various patterns are sold, with round and square points, and with and without a thin ivory spatula at the end opposite the blade, as in figure 1. Each regular budder has his own notions about the best shape, but the rapid budders generally use a round blunt-pointed knife, and some prefer to have the blade fixed, and in a round wooden handle. Whatever the style of knife, it should be very sharp.

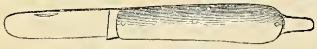
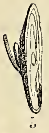


Fig. 1.—BUDDING KNIFE.

The Tying Material in most general use is bast, either imported in the form of Russia matting, or that made from our native Basswood; other imported fibers are sold, such as Roffia, Japan-Flax, etc. Some budders at the West prefer selected inner corn-husks, or "shucks," to any other material, while some use soft cotton twine exclusively.

The Operation is here illustrated by some engravings from Fulton's "Peach Culturist." The leaves being stripped from the lower part of the stock, the budder makes an upright cut through the bark, and another crosswise at the top of that, as in figure 2. He then cuts a stick of buds, and selecting a leaf bud (*fruit* buds are larger and rounder, and are not used), he enters the knife about half an inch above the bud, and cuts downward so that the knife will come out about as far below the bud; this will remove a shield of bark, upon which is the bud and the leaf-stalk below it, which serves as a handle to the shield (fig. 3). A small portion of the wood will be taken off with the bark. Some advise the removal of this bit of wood, but in practice it is usually left, taking care to have it as thin as possible. The corners of the cut being lifted by the blade of the knife, or thin ivory on the handle, the bud is inserted as in figure 4, and the top of the shield cut square with the cross cut on the stock. The bud is now to be tied in, with a few turns of bast or other material, leaving the bud exposed. Figure 5 shows one method of tying.

2



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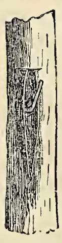

4

Fig. 2.—THE CUT.
Fig. 3.—THE SHIELD AND BUD.
Fig. 4.—BUD INSERTED.

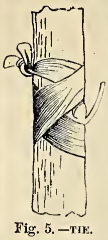

Fig. 5.—TIE.

The Time for Budding varies with the character of the season. Plums usually come first, Pears on Pear-stock; Apples, Peaches, Cherries, on Mazzard stock; Pears on Quince, and Cherries on Mahaleb follow in the order named.

After Care.—If the bud has formed a union with the stock, or has "taken," it may be known at the end of 10 days or two weeks from the time of insertion. If it succeeds it will remain plump, the portion of bark attached to it will be fresh and bright, while the leaf-stalk that served as a handle, will have ripened and fallen off. Shriveled bud and bark, with the leaf-stalk dried up and holding fast, show a failure. At the end of three weeks the ties are cut and removed, but in some stocks the growth may have caused the tie to strangle before the union is complete, and it must be loosened before it can be removed altogether. The next spring the stock is cut away above the bud, and the whole growth of the tree be confined to that.

Expert Budders work with astonishing rapidity, and consider 1,500 to 2,000 buds a fair day's work, but some will put in 3,000. By practice they acquire a knack of working with the fewest motions; both cuts are made without taking the knife away from the place, and when the stock is in proper condition, the bark is not lifted other than by the bud when it is pushed into its place. These experts have one man or boy to go ahead and strip the stocks, and two to follow and tie.

Fruit Garden.

The fruit for the present season being off of many kinds, preparation for the crop of next year is now in order. With a view to this in

Raspberries and Blackberries, we prefer, for reasons given last month, to cut away the old canes as soon as the fruit is off. Select the new shoots that are to fruit next year, and keep them tied up, destroying all the others. When these reach four feet high in raspberries, and six feet in blackberries, stop them by cutting or pinching off the tip; some prefer them lower than this by a foot. This stopping will cause branching, and the branches should not be allowed to grow over 15 or 18 inches long.

Black-Cap and Purple-Cane raspberries should have the old branches cut out, and if so many new ones start as to make the bushes crowded, remove a part. Stop the remainder at 3 or 4 ft.

Strawberries.—Those who have runners rooted in small pots, may set out this month, and get a good crop next year. Runners from the bed had better be left until next month, unless one can give special care. Plants set now should have all the outer leaves removed, to prevent evaporation, leaving only the bud of undeveloped leaves in the center; spread the roots well; water to settle the earth around the roots, drawing fine soil around the plant, and mulch with stable litter. If a very dry time follows, watering may be needed. While this would not pay in field culture, it may be practised in the family garden, and a good crop, if not a full one, be had next spring.

Grapes.—But little work is now required in the vineyard. Hand-pick the large beetles and caterpillars; apply sulphur on the first appearance of mildew; pinch in the growth of laterals, and remove shoots that push where they are not wanted.

Kitchen and Market Garden.

Beyond the gathering for use or market such articles as are ready, there is less work required in this department now, than in any other growing month; still preparation may be made for a few late crops, and the general care of the growing crops, as set down in the Notes of the last and previous months, will require attention—and weeds—which we always have with us, are quite sure to prevent anything like absolute idleness.

Sowing Seeds may be done for late crops of bush beans, spinach, radishes, and lettuce. Those who wish to try a late crop of peas, should put in the early sorts, but in most seasons they mildew so badly as to be worthless.

Turnips of the Swedes and Ruta-Baga kinds, should have been sown last month, but a fair crop may be generally had by sowing at once. The intermediate sorts, such as Cow-Horn and Yellow Stone, may be sown by the middle, and the flat sorts, of which the Red-top Strap-leaf is best, at the end of the month, or early in September. Lime or ashes, or a mixture of the two, may be dusted over the young plants to keep off "the flea," which is less troublesome than early in the season.

Onions are ready to harvest when the tops of a majority have fallen over. Many growers send to market directly from the field. If they are to be kept, they should be cured a few days in the sun, stacking at night in heaps of a few bushels each, with the tops outward. When stored, spread in thin layers in an airy loft.

Onion Sets are pulled, allowed to dry thoroughly, and spread in an airy place, in a layer not over six inches deep. They must be looked to, and stirred occasionally, during warm weather.

Working of Crops in rows should be continued until the leaves become so large as to stop it. The late cabbages will need frequent hoeing.

Celery should have been put in earlier, but plants set at once will make fair-sized heads. The growth is to be promoted by hoeing and weeding.

Sweet Potatoes should now cover the ground, and keep the weeds down, and need no other care than moving the vines occasionally, to prevent them from taking root.

Sweet Corn.—As soon as the ears are taken from a row, the stalks should be cut up at once, and cured for fodder. If allowed to stand, they will grow woody and become valueless.

Insects will still attack the plants, especially tomatoes, squashes, and all of their family, egg plants, etc., and should be destroyed, as advised in last month's Notes.

Flower Garden and Lawn.

Keeping things in a neat and orderly condition, will require care rather than hard work.....In a dry time, the lawn should not be mowed too closely, or too often.....Keep the ornamental beds in well defined lines, and regulate the hight of the plants.....Give supports to such plants as need them; dahlias, lilies, gladioluses, and others, are often not presentable, unless helped to stand erect. ....Cut away spent flower clusters, except where seeds are wanted.....Insects are always to be kept under; lilies, especially the Japan sorts, are attacked by a small caterpillar upon the under-side of the leaves, and will riddle them, unless stopped—thumb and finger and a squeeze will do it.

Greenhouse and Window Plants.

There is scarcely anything to add to last month's Notes, which mainly had reference to the care of plants placed out of doors. Needed shade, water, and protection against injury, whether from insects or larger animals, are to be given to the plants, whether set outside, or remaining in the house.... The present is a favorable month for doing all needed repairs, whether to the house or the heating apparatus.....Bedding plants may be propagated by cuttings this month and next, for a stock to keep over winter.....Any plants in pots, that are not in healthy condition, may have the soil washed from their roots, and be re-potted with fresh soil, using a pot no larger than before; this treatment is especially beneficial to roses kept in pots, and with other plants will often recuperate them, as well as the usual method of giving larger pots.

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Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending July 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	267,500	2,541,000	3,104,000	79,000	197,000	1,281,000
26 d's *last* m'th	231,000	486,000	1,916,100	113,000	89,000	814,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 d's *this* m'th	354,000	2,605,000	4,216,000	119,000	225,000	1,209,000
26 d's *last* m'th	283,000	991,000	5,840,000	121,000	270,000	917,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1877..	267,500	2,541,000	3,104,000	79,,000	197,000	1,281,000
24 days 1876..	331,000	4,937,000	2,405,000	239,000	141,000	1,216,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
25 days 1877..	354,000	2,605,000	4,216,000	119,000	225,000	1,209,000
24 days 1876..	363,000	2,376,000	2,613,000	143,000	—	986,0.0

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
July 9, 1877..	418,655	368,858	39,828	92,434	925,153	245,432
June 11, 1877..	521,308	620,613	206,815	91,846	826,054	296,129
May 7, 1877..	761,686	468,809	193,046	174,375	347,881	291,654
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	213 841	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Exports from New York, Jan. 1, to July 11.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1877....	613,411	4,640,064	10,108,374	747,505	543,151	92,515	150,282
1876..	1,043,423	15,760,390	8,398,861	514,823	8,078	272,584	410,920
18.5....	923,289	10,638,507	6,008,193	105,687	165	61,840	218,169
1874..	1,182,136	20,601,800	10,185,019	513,622	240	62,603	253,765
1873....	658,482	6,377,645	6,531,315	199,676	19,226	17,578	53,030
1872....	448,080	4,202,505	11,967,765	366,829	22,656	17,215	115,066

5. *Tide-water Receipts at Albany, from opening of navigation to July 7th:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1877..	2,300	1,361,800	4,111,100	133.100	310,700	728,200	175,800
1876..	10,100	5,594,100	887,100	243.500	91,000	1,129,700	231,000
1875..	17,200	4,295,800	1,214,300	54,400	—	782,300	423,308
1874..	17,900	8,618,000	4,190,000	174,100	74,100	990,200	—
1873..	52,100	3,556,700	3,518,100	293.100	12,200	810,400	—
1872..	32,200	1,682,800	6,516,600	203,100	451,200	1,561,200	—
1871..	78,700	4,328,300	4,258,000	46,200	40,100	999,600	—

Gold has been up to 106⅜, and down to 104¾, closing July 12, at 105⅜, as against 104⅞ on June 12; 107¼ on May 12; 105⅞ on April 12; 104⅝ on March 12; 106 on Jan. 12; 107¼ on Dec. 12, 1876, and 111⅞ on the 13th of July, 1876... Business in Breadstuffs has been on a more extensive scale, but at variable prices, influenced by the European advices, the domestic crop reports, the course of the arrivals at the seaboard, the condition of the ocean freight market, and other less important circumstances. The dealings in Flour have been fairly active, and toward the close at generally firmer rates, Minnesota Extras, and desirable Winter Wheat Extras attracting most attention. New crop Wheat Flour has been arriving moderately, and meeting with a prompt sale, mostly within the range of $9@$10 ℔ bbl, for trade and family extras. Wheat has been more freely purchased, mainly for shipment, leaving off, however, weaker as to values, the offerings having been quite liberal, especially of new crop red and amber, chiefly for August delivery, the transactions in options for which month have been remarkably large within the past few days, principally for export account, closing with No. 2 Red Western (winter) Wheat, seller August, at $1.43 per bu. The opening sale of new crop Amber Wheat, here, some weeks since, was at $2.25 per bushel, for a small lot. The best new crop Amber Wheat, is now quoted at $2 per bushel. New crop No. 2 Spring, New York inspection, for September delivery, sold on Wednesday, July 11th, at $1.33¼. Corn has been unusually brisk, the business having been largely at the regular Call, closing at easier rates, under increased offerings. The arrivals at the seaboard now grade higher, as an average, than a month ago. Rye has been recently in better demand, and closed more firmly. On the 11th inst., 17,000 bushels prime State, for early arrival, sold at 93c. Feed Barley has been purchased freely for shipment, at rather stronger figures. Oats have been quite active, but unsettled as to values....More demand has been noted for Cotton, which has been quoted higher....Wool has been more sought after here and at the interior, and has been quoted dearer....Hay and Hops have been rather lightly dealt in at reduced quotations....Tobacco in moderate request at easier rates....Rice brisker and firmer.... Naval Stores and Petroleum, moderately active....Grass Seeds dull....Groceries less active; Sugar and Molasses cheaper....Ocean freights have been more active, and at the close, steadier for Grain; otherwise depressed ... Grain rates by steam to Liverpool closed on the 12th of July at 5@5½*d.*; to Glasgow at 5*d.*; to London at 6½*d.*; to Liverpool, by sail, 4½@5*d.*; London, by sail, 5½@6*d.*, per bushel. Provisions by steam to Liverpool, 20*s.* @ 40*s.* per ton; Cotton by sail and steam at $^3/_{16}$ @ ¼*d.* ℔ ℔. Grain, by sail, for Cork and orders, at 4*s.* 6*d.*@4*s.* 9*d.*, and to Danish ports, 5*s.*@5*s.* 6*d.* per quarter.

CURRENT WHOLESALE PRICES.

	June 12.	July 12.
PRICE OF GOLD	104 7-8	105 3-8
FLOUR—Super to Extra State	$5 50 @ 7 35	$5 50 @ 7 25
Super to Extra Southern....	5 75 @11 00	5 65 @11 25
Extra Western..........	6 85 @11 50	6 25 @11 25
Extra Genesee..........	7 50 @ 9 50	7 25 @ 9 25
Superfine Western	5 50 @ 6 25	5 50 @ 6 40
RYE FLOUR	4 25 @ 5 25	4 75 @ 5 25
CORN-MEAL..........	2 65 @ 3 45	2 65 @ 3 55
WHEAT—All kinds of White.	1 85 @ 2 05	1 85 @ 2 15
All kinds of Red and Amber.	1 15 @ 2 15	1 00 @ 2 00
CORN—Yellow	59½@ 61⅛	60 @ 64
Mixed	57½@ 60	57 @ 61
White..........	59 @ 61½	60 @ 67
OATS—Western	39 @ 62	32 @ 58
State	60 @ 67	56 @ 63
RYE..........	78 @ 1 00	72 @ 95
BARLEY	50 @ 1 10	50 @ 1 10
BARLEY MALT..........	65 @ 1 35	70 @ 1 30
HAY—Bale, ℔ 100 ℔s..........	65 @ 1 00	55 @ 95
STRAW, ℔ 100 ℔s..........	50 @ 80	45 @ 70
COTTON—Middlings, ℔ ℔....	11⅝@ 11¾	12⅛@ 12¾
HOPS—Crop of 1876, ℔ ℔	6 @ 17	5 @ 14
" old, ℔ ℔..........	4 @ 10	2 @ 8
FEATHERS—Live Geese, ℔ ℔.	40 @ 45	35 @ 45
SEED—Clover, ℔ ℔	— @ —	Nominal.
Timothy, ℔ bushel..........	1 90 @ 2 00	1 85 @ 2 00
Flax, ℔ bushel..........	1 70 @ 1 85	1 65 @ 1 75
SUGAR—Ref'g & Grocery ℔ ℔	9 @ 11¼	8½@ 10⅛
MOLASSES, Cuba, ℔ gal.50 test	48 @ 50	42 @ 43
New Orleans, new crop, ℔ gal	48 @ 62	45 @ 58
COFFEE—Rio (Gold)..........	16½@ 20½	17 @ 20¾
TOBACCO, Kentucky, &c., ℔ ℔.	4½@ 18	4 @ 17
Seed Leaf, ℔ ℔..........	4½@ 50	4½@ 50
WOOL—Domestic Fleece, ℔ ℔	30 @ 50	32 @ 55
Domestic, pulled, ℔ ℔	20 @ 89	20 @ 42
California, spring clip,..........	13 @ 28	13 @ 35
California f & clip..........	10 @ 20	10 @ 25
TALLOW, ℔ ℔	— @ 8	7⅞@ 8¼
OIL-CAKE—℔ ton	36 00 @ —	34 00 @34 50
PORK—Mess, ℔ barrel..........	14 15 @14 25	14 35 @14 40
Extra Prime, ℔ barrel..........	11 00 @11 50	10 00 @10 50
BEEF—Plain mess..........	12 00 @13 50	11 00 @12 00
LARD, in tres. & bbls, ℔ 100 ℔	7 75 @10 00	8 25 @10 00
BUTTER—State, ℔ ℔..........	12 @ 28	12 @ 23
Western, poor to fancy, ℔ ℔.	10 @ 23	9 @ 22
CHEESE..........	5 @ 12¼	3 @ 9¾
BEANS—℔ bushel..........	2 30 @ 3 85	2 25 @ 3 50
PEAS—Canada, in bond, ℔ bu.	— @ 1 00	93 @ —
EGGS—Fresh, ℔ dozen	14 @ 16½	14½@ 17½
POULTRY—Fowls & Chickens	10 @ 16	10 @ 18
Chickens, spring, ℔ ℔..........	20 @ 25	20 @ 24
Turkeys—℔ ℔..........	10 @ 16	10 @ 16
Geese, ℔ pair..........	1 12 @ 2 50	1 12 @ 1 20
Ducks, ℔ pair..........	65 @ 1 00	60 @ 1 00
Roosters, ℔ ℔..........	6 @ 7	6 @ 7
PIGEONS, wild, ℔ dozen..........	1 25 @ 1 50	1 25 @ 1 50
SQUABS, per dozen	Nominal.	50 @ 1 00
TURNIPS ℔ bbl..........	75 @ 1 00	— @ —
" ℔ 100 bunches..........	— @ —	1 50 @ 2 00
CABBAGES—℔ 100..........	— @ —	2 00 @ 6 00
ONIONS—new, ℔ bbl..........	— @ —	2 75 @ 3 00
" ℔ crate..........	1 00 @ 1 50	1 00 @ 1 50
LETTUCE, ℔ bbl..........	50 @ 1 00	50 @ 1 00
CARROTS, ℔ dozen bunches..	— @ 37½	— @ —
POTATOES—new, ℔ bbl..........	2 00 @ 3 75	1 50 @ 5 50
SPINACH, ℔ bbl..........	50 @ 75	— @ —
TOMATOES, new, per crate....	1 25 @ 3 50	1 00 @ 2 50
BEETS, ℔ 100 bunches..........	2 50 @ 4 60	1 50 @ 2 25
RADISHES, ℔ 100 bunches	50 @ 87½	50 @ 75
ASPARAGUS, ℔ doz. bunches.	1 00 @ 2 25	— @ —
STRING BEANS, ℔ bag..........	— @ —	50 @ 1 00
RHUBARB, ℔ 100 bunches.....	1 25 @ 2 00	1 00 @ 2 00
CUCUMBERS, ℔ crate..........	1 50 @ 2 25	1 00 @ 2 50
BROOM-CORN	3½@ 8½	4 @ 8
GREEN PEAS, ℔ crate..........	2 50 @ 4 00	— @ —
WHORTLEBERRIES, ℔ bush...	— @ —	2 75 @ 3 50
" ℔ qt......	— @ —	8 @ 12
APPLES—℔ barrel..........	1 60 @ 4 50	1 25 @ 4 50
STRAWBERRIES, ℔ quart......	5 @ 15	— @ —
SQUASH, ℔ basket..........	— @ —	30 @ 50
PEANUTS, domestic, ℔ bush..	1 00 @ 1 50	1 20 @ 1 50
PEACHES, ℔ crate..........	5 00 @ 6 00	1 00 @ 3 50
GOOSEBEARRIES, ℔ bush......	1 50 @ 2 00	75 @ 1 25
RASPBERRIES, ℔ 1-3 cup......	— @ —	2 @ 5
CHERRIES, ℔ ℔..........	— @ —	6 @ 12
CURRANTS, ℔ ℔..........	— @ —	6 @ 10
BLACKBERRIES, ℔ qt..........	— @ —	8 @ 15

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
June 18..........	12,801	99	4,688	26,045	23,862
June 25..........	9,153	80	4,239	24,688	19,075
July 2..........	9,623	45	5,160	25,429	22,787
July 9	9,697	79	3,456	21,921	18,108
July 16..........	9,816	87	4,108	22,038	18,235
Total for 5 *Weeks.*	50,590	390	21,646	120,121	102,067
do. *for prev.* 4 *Weeks*	38,982	260	10,334	82,673	84,446

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week.....	10,118	78	4,329	24,024	20,413
do. do. *last Month*..	6,745	65	4833	20,608	20,361
do. do. *prev's Month.*	13,761	66	4,300	18,062	21,777

Beeves.—Immediately after our last month's report was closed, the market took a jump, and reached an average of 12½c. ℔ ℔., on very mixed sales. Dealers apparently "lost their heads," and laid up trouble for themselves. Within a week a sudden fall of 1c. ℔ ℔., brought grief on several, and before the month ended one or two failures, with other causes, helped to depress the market. As a proof of the soundness of our judgment with regard to the exceptional character of the export trade, we note the falling off in shipments, along with the higher average of prices here. The margin of profit, always small, has grown smaller than nothing, and it is simply to keep things together that the business is sustained. The past month there have been only about 3,000 head of dressed cattle sent out, and about 1,000 live animals. The hot summer weather, of course, has something to do with this, but this always will act as an accessory to low prices in reducing profits. The market closed with a higher average, but really lower prices, because the quality was much higher than usual. Low grade native steers, of 55 to 56 ℔s. ℔ cwt., sold for 10 @ 10¼c. ℔ ℔., good natives, 57 ℔s., at 11½ @ 12c., and extra, 58 ℔s., at 12¾c. ℔ ℔., with a dull dragging market.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
June 18..........	9½@13½c.	10¾@12½c.	11½c.
June 25..........	9 @13½c.	10½@12½c.	11¾c.
July 2..........	7½@13¼c.	11 @12 c.	11¼c
July 9..........	7 @13¼c.	8 @12½c.	10¾c.
July 16..........	8¾@12¾c.	10 @12¾c.	11¼c.

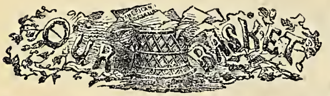
Cows.—After a dull week at the beginning of the month, during which poor stock was worked off, a better business was apparent with an advance of $5 per head on good cows. Poor cows are almost unsalable at any price. Common to fair cows sold at $45 to $50 per head, extra good animals brought $70 to $75.....**Calves.**—With a considerable falling off in supply, veals have done better, there being a good demand for fat veals at 7c., 7½c.@8c. per lb. alive... **Sheep.**—Sheep and lambs are lower after a pretty steady business during the month. 1,100 fat sheep have been exported. Poor sheep sold for 4c., 90 to 120-pound sheep brought 4½c.@5c. per lb., and prime stock reached 5¾c. Thin lambs sold for 5½c.@6c., and the best Jersey and Canada lambs at 7½c.@8c. per lb. live weight.....**Swine.**—A dull market for hogs has been experienced through the month, and there is no change to note at the close; 160 lb. hogs selling at 7½c. dressed; heavy hogs at 6¾c.@7¼c., and pigs at 7¾c. per lb. dressed.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₩ ton	$56.50
do. do. Lobos, do. do, do.	47.50
do. do. guaranteed, ₩ ton, cargo C	56.00
do do. rectified, per ton, 10 p. c.	66.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Wheat and Grass Manure, ₩ 1,000 lbs.,	27.00
do. Tobacco do. do.	24.67
do. Turnip do. do.	19.36
do. Bone, strictly pure, fine ...per ton.	40.00
do. do. do. medium do.	37.00
do. do. do. coarse do.	35.00
" Dissolved Bone, 15 per cent. do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton	40.00
" " Dry g'd Fish Guano, ton 9 p. c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton	7.00@8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (actual potash 44 per cent) per lb.	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$20.00
Muriate of Potash (actual potash 50 per cent), per lb...	2½c.
Nitrate of Soda, per lb	4⅛c.@ 5 c.
Sulphate of Ammonia (25 per cent.), per lb....	4¼c.@ 4½c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$50



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

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The Fairs.—While we have received a larger number of notices than usual up to the present time, we would renew our request to Secretaries of the various State, County, and other Societies, who have not already sent, to forward us *at once*, the time and place of their coming fairs. If posters or programmes are not yet ready, postal cards are, and it helps greatly towards the accuracy of the list, to get the data from headquarters.

New York Horticultural Society.—The following prizes awarded to Sam'l. Henshaw, gardener to Mrs. Greene, New Brighton, Staten Island, were accidentally omitted. Mr. H. took the first prize on cucumbers, a fine pair of Telegraphs. He was also awarded a special premium for Brown Turkey Figs.

The Death of Charles O. Judd.—In April 1869 it was our sad duty to record the death of Mr. Judd's then oldest son, William Orange,—a youth of great promise and of such early developement that though only 13 years of age, he was nearly advanced in his studies to enter college. Charles O., who was after Willie's death the eldest of three boys, was in Wesleyan University at Middletown, Conn., where he had just completed his Junior year, and had passed a most creditable examination preparatory to entering the Senior class. The exercises of the Commencement Week were to include an exhibition in the Gymnasium, and as Charlie had been one of the best athletes during his first two years, he was urgently solicited to assist in the preparation. He had, however, outgrown a love for such exercises, and his parents were also opposed to it. But at the last moment, as a matter of accommodation, he went in to aid the others a little, and on June 23d, while showing a simple performance on a low cross-bar, he dropped a few feet upon a mattrass, as he has often done from much greater hights, and striking upon his head, he in some unaccountable manner shattered the fifth cervical or neck vertebra, and severely injured the spinal cord, as it was found after death. He was taken home, and the best medical aid was called. All below the neck being not only paralyzed, but without sensation, the case was from the first pronounced exceedingly grave, but as recovery had, though rarely, followed similar accidents, the family had still the very slender hope to cling to, that Charlie, being of a most robust constitution and of vigorous habit, might prove to be one of the exceptional cases. The fact that he survived beyond the time at which such injuries are usually fatal, seemed to be in his favor; but all care and hope were vain, and after lingering for 16 days, with his mental faculties unimpaired, except when occasionally under morphine to allay pain in head, he gradually grew weaker until July 9th, when death came to his relief,—a death for which the comforting assurance that he was well prepared, remains for the loved ones who survive him. Charlie was a young man of very quiet disposition, and inheriting much of the mechanical talent and practical turn of mind of his father, he had a special fondness for mathematical studies and the natural sciences. A promised career of future usefulness is thus suddenly ended at the early age of 19, and by an accident that in itself seems so trivial, that it shows in a manner so forcible as to be startling, by what a slender tenure are held our own lives and those upon which our hopes are built. Of course this occurrence cast a gloom over the usually joyous Commencement Anniversary. Of the grief it brought to the household, this is not the place to speak. When we state that this is the fifth time the father has been called to mourn the loss of an eldest son, every parent will feel that it is a bereavement of peculiar sadness, and one of those dispensations so beyond human scrutiny, that we can only bow in submission, knowing that the Hand that taketh away is the Hand that gave.—[We have written the above in the absence of Mr. Judd, believing that his many friends will be interested in knowing the particulars here given. EDS.]

The Death of C. H. Walton.—The "Florida Agriculturist," of June 30th, announces the death of its founder and publisher, Mr. Walton, at Tallahassee, Fla., on June 27th, of consumption.

Swine Husbandry—Now Ready.—The work, by F. D. Coburn, of Pomona, Kas., announced last month as in press, is now ready. It forms a handsome volume of 275 pages, and is "chock full" of solid meat. The author is himself a breeder of swine on a large scale, and in addition to his own wide experience, gives that of other practical men who have long been engaged in this important branch of agricultural industry. We like to see an author who does not think that he knows all that is worth knowing on his special topic, and is willing to give others credit for labors in the same field with his own. In this volume Mr. Coburn has introduced papers, or copious abstracts of papers, of great value, but which are hidden in the reports of societies and elsewhere, and hence not accessible to the public in general. An example of these is an essay by Joseph Sullivant, Esq., of Ohio, on "Hog-Feeding and Pork-Making," which is of itself worth the price of the book. The division of the work which will be most eagerly consulted, is that devoted to the "Diseases of Swine," where, as mentioned last month, all that is known about that scourge, the "Hog Cholera," is here brought together, and the information upon this, as upon all other subjects, is up to the most recent date. Being a western man, the work has a decided western flavor, so to speak; while principles are the same everywhere, practice is greatly modified by locality; in certain Western States the conversion of the staple product, Indian corn, into pork, has an importance it can not assume in States where the agriculture is more varied, and its operations upon a smaller scale; while the work is none the less useful to the farmer or villager who keeps but few animals, this is the only one within our knowledge that gives the methods of managing hogs in large numbers. Indeed, there seems to be no topic relating to the subject, that is not plainly and intelligently treated, even to putting down the family supply of pork, hams, and bacon, and we are sure that the work will be generally acceptable to farmers in all parts of the country. Published by the Orange Judd Company, and sent, post-paid, on receipt of price, $1.75.

An Honor Well Bestowed.—So long as conferring titles and bestowing orders are in many countries the customary methods of rewarding distinguished services, we are glad to see them sometimes fall to others than those eminent in the arts of war. Every horticulturist will be glad to know that Doct. Joseph Dalton Hooker has been thus honored by his Sovereign. His election, within a few years, as President of the Royal Society of England, was a really greater honor, as he was placed there by the votes of the most eminent scientific men of England, and it is generally regarded the highest honor these men can pay to one of their peers. Doct. Hooker is one of the few leading botanists of the world, and as Director of the Royal Gardens at Kew, he occupies a position in which he has been able to do much for horticulture; while pre-eminent as a scientific botanist, he is none the less practical, as his labors in the introduction and cultivation of the Cinchona, or Peruvian Bark trees into India, and the introduction of other useful plants into these and other British possessions are evidence. In view of his services to science and the national welfare, the Queen has made him a Knight of the Order of the Star of India. This honor is accorded to but very few, and we are sure that none of the select company of the Order have better deserved it, or will wear it more modestly, than Sir Joseph Dalton Hooker, K.C.S.I.

How Nebraska Looks.—One of our associates who is making a Western trip thus summarizes his observations in Nebraska. Writing from Lincoln he says: Have travelled the entire length of the State, distance about 500 miles, visiting the majority of the counties. Crops promise a great yield. Corn is backward, owing to June rains, but is now coming rapidly forward. Grasshoppers are *non est.* Apprehensions regarding them being dismissed. Farmers in good spirits, and in hopes of reviving emigration, which stopped two years ago. Farmers are paying too much for money, 12 to 20 per cent, and buying too much machinery on credit. Mennonites and Bohemians are settling here in considerable numbers. Cattle in the western, which is the grazing portion of the State, are looking fine.

Putting Down Butter.—While the butter made in September has not usually the rich flavor of that made in June, next month's product is mainly that which is put down by farmers and dairymen for the winter's supply. Much of the success in keeping butter depends upon the quality of the salt used in packing it. If the "Domestic Society" (there is much more of the name) of the little State of Rhode Island, was not the first to discover, it was, we think, the first to publish the fact, that the poor keeping of butter was due to impurities in the salt. They had analyses made of the various brands of salt, and it was found that those kinds that were found best in practice, were shown by analysis to be the least contaminated by salts of magnesia. Among the various brands of salt in the market, none bears a higher reputation for purity, than that known as "Ashton's Factory Filled," and so firmly is this reputation established, that in some important butter-making localities, no other brand can be disposed of. The quality of the salt is of so much importance, that butter makers, if none is sold near at hand, had better order it from New York, than to risk the use of a brand, the purity of which has not been tested.

The Rural New Yorker has experienced another change in its management. Mr. A. S. Fuller, the former editor, and Mr. G. A. C. Barnett, publisher, both retire from their positions on the "Rural," having disposed of their interest to Mr. E. Carman, one of the joint proprietors, who thus assumes entire control.

Screws vs. Stitches.—The writer, when a boy, once heard an old gentleman, who was himself an excellent mechanic, say that there was one product of human industry that had reached perfection, and in which no further improvement was possible—that was a well-made boot. The old gentleman did not foresee that screws of brass wire would supersede stitches of flaxen thread, for the "Standard Screw Machine" had not been invented, and the "McKay Metallic Fastening Association" was not then thought of. This most ingenious machine, being supplied with a coil of wire, upon which is cut a continuous screw-thread, automatically cuts this wire of the proper length, and screws the pieces into the boot or shoe, as near or as far apart, as may be desired, fastening the parts together with a firmness and solidity not to be attained in the ordinary methods. The machine, made by the "McKay Metallic Fastening Association," of Boston, is an improvement upon that formerly made by the "American Cable Screw Wire Co.," noticed a year or two ago, and while it embodies all the good qualities of that, there are important inventions added, one of the most essential being that of turning the wire-fastening into the leather, just as a wood-screw is driven into wood. Each machine is capable of bottoming 250 to 300 pairs daily. An inspection of the work will at once show its great durability, which is attested by the fact, that shoes made in this manner are exclusively used in the U. S. army. One of our associates, who had a pair of boots, which were fastened in this manner, complains that he became tired of them, as they were so long in wearing out. Those of our readers, who wish to try boots or shoes made with the "Standard Screw," should not apply to the Company above named, as they make only the machines to supply to manufacturers, but to their shoe-dealer. There are a plenty of such in the market, and the dealers can readily procure them, if there is a demand for work put together by the "Standard Screw."

Woodward's Drawing Studies, and Alphabets.—These are two serial works by Geo. E. Woodward, and published in monthly parts by W. H. Stelle & Co., New York. The Studies in Drawing are from original designs by some of the leading French artists, and have a freshness that contrasts quite favorably with the old and hackneyed drawing books, and are well suited to class or home instruction. The work on Alphabets contains the greatest variety of letters, monograms, and titles. All who have lettering of any kind, whether on signs, paper, or embroidery to execute, will find here an almost inexhaustible series of examples in every known style. Each work will be completed in 24 parts, five of which are now ready, and two more will be added each month. Sold by subscription at 50 cents a number, each number containing eight beautifully executed quarto plates.

The Plague of Insects.—The prevalence of insects of different kinds and degrees of destructiveness which has been experienced during the present season has not been confined wholly to America. The French farmers have also suffered from insects. Cockchafers have been so abundant in some departments that rewards have been offered for their destruction; $100 procured the capture of 10,000 gallons of the insects. These depredations, which have occurred about once in every three years, have led to the passage of a law for the protection of small birds against the so-called sportsmen. It is time we took a lesson from the French.

American Veterinary Review.—The fifth number of Vol. 1 is received. With the exception of a communication of a needlessly severe personal nature, and which we are sorry to see in this otherwise excellent magazine, it is filled with useful matter. A case that is interesting to farmers and shepherds, is one of some lambs of the Central Park flock, which were sick for a few days, taken with convulsions, turning round in a circle, and finally dropping down, would die. On examination, the small intestine was found filled with tapeworms, (*Tænia expansa*), some of them being 15 feet in length. The brain was congested. Although no cause is assigned for the presence of these parasites, it is easy to fix it as being due to long pasturing the same ground by this flock. Every shepherd knows, or should know, the danger of this practice to the lambs of the flock.

Castor Pomace as a Fertilizer.—The refuse of the castor-oil mills is a valuable fertilizer. It is rich in ammonia, containing by an old analysis of Prof. Johnson about 6 per cent, and by a recent analysis 7½ per cent. It also contains potash and phosphoric acid; but its chief value is in its ammonia. It is now largely made in St. Louis, and can be procured at any part of the country from that central point very cheaply. At $10 a ton, which is its price at the oil-mills at St. Louis, the ammonia costs less than 7 cents a pound. For making compost with swamp muck, earth, or refuse of any kind, there is no better or cheaper material than this. Messrs. Robt. B. Brown & Co., of St. Louis, who manufacture this substance largely, inform us that it has heretofore been shipped to England, where every fertilizer that can be procured is eagerly sought and secured. It is a pity and a loss that every valuable waste product of this kind should be sent out of the country, but there are very few farmers or gardeners, who know anything of this peculiar fertilizer. It is furnished as a coarse dry powder, in excellent condition for composting, or for applying at once to crops in any way that may be desirable.

Lobos Guano.—Messrs. Hobson, Hurtado & Co., agents of the Peruvian Government, have issued a circular intended to show farmers the difference in quality and uses between the Lobos and other guanos. The average composition of Lobos, in percentages, is: ammonia 6, phosphoric acid, 15 to 20, and potash 3 to 5. They commend it as the best and cheapest general fertilizer, and superior, except for such crops as require a highly stimulating fertilizer, to the Standard Guano, with 10 per cent of ammonia. For winter wheat they advise 200 lbs. of Lobos guano to the acre, with the seed, and in the spring, when the growth needs to be accelerated, to supplement this with a dressing of high-grade guano, at the rate of 100 lbs. to the acre.

Prizes for Tree Planting.—That venerable and useful association, the "Massachusetts Society for Promoting Agriculture" have undertaken, what really belongs to the State to do—to encourage tree planting and cultivation in Massachusetts by offering several premiums each for plantations of White Ash, White Pine, Scotch Pine, and European Larch. Not only are the premiums, to be awarded in 1878, liberal, but the Society goes still further, and offers to gratuitously aid competitors in procuring seeds and trees from dealers at home and abroad. With all these inducements, added to the real value of the plantations when made, we shall be surprised if the competitors are not numerous. The conditions of the offers and all other information concerning them may be had on application to Francis Skinner, Esq., Brookline, Mass.

A Very Desirable and Attractive Home is advertised on page 316. Probably no more eligible place could be found in the whole country, for a family of some means, to remove to, temporarily or permanently, for the purposes of education, securing excellent society, etc.

Economy in Feeding Chickens.—It is in the small economies that the farmer must look for his profits, and a saving can be made even in so small a matter as feeding chickens. Where there are many fowls raised, throwing the food for chickens directly upon the ground, causes a waste, which in the aggregate amounts to considerable, and which can be saved by the use of Fowler's "Economy Iron Feeder." They are very simple in construction, easily kept clean, and keep food and water in an accessible and pure condition.

Blindness in Pigs.—"P. & Co.," Galveston, Texas. There are some poisonous plants which, acting strongly upon certain nerves, paralyze them. Thus the brain or optic nerve being affected by one or these, blindness would be the result. A plant known as "Paint-root," which is common in the South, acts in this manner upon white pigs, and possibly also upon very young black ones. This plant was described in the *American Agriculturist* of March, 1876. It may possibly be the cause of the trouble amongst your swine. Young pigs regain their sight when removed from the poison, and old ones, although permanently blind, will fatten readily.

Convention of Short-horn Breeders.—The report of the 5th Annual Convention of the breeders of Short-horns, which was held at St. Louis, Mo., December, 1876, has been received. The proceedings were of great interest, not only to breeders of this class of stock, but to farmers generally. Their discussions go to show that the day of enthusiasm, if not of extravagance, is past, and that the period of useful public service has arrived. There is now a surplus of bulls in breeders hands, and a process of weeding may be begun. If this is done with regard to intrinsic value, and not to pedigree alone, some weeds of high lineage, but of very little value, will be got rid of, and some new but promising families, may come "to the fore." Now is the time to popularize the breed; make steers of some of the bull calves and show what stuff these animals are made of in the butcher's stall. This is the way in which their old reputation was made, and in which it was kept up, until of recent years, when the Herd-book record was made to cover a multitude of imperfections. At reasonable prices, good young bulls can be sold to farmers, and good cows to dairymen, and if the modern Short-horn can be brought to the pail with as much profit as was the first Duchess, there is a long and useful history ahead for them, as the farmers' and dairymen's cattle.

How Eggs are Preserved.—The process of dessicating or drying eggs has given rise to a considerable industry. The American Egg Comapny, of Keokuk, Iowa, uses daily 3,000 dozen of eggs, although the business is as yet in its infancy. The U. S. Egg Dessicating Company of St. Louis, also does a large business, and other factories are being put into operation. The process is as follows: The eggs after careful candling, are broken and cleared of their shells by machinery and delivered in the form of a batter, the whites and yolks thoroughly combined. The batter is then discharged by a peculiar arrangement, upon rapidly revolving metallic cylinders, under a strong blast of heated air. These cylinders are automatically self-cooling, remaining at a temperature of 70° Fahrenheit, and so maintaining at that point all the egg dried upon them, in spite of the greater heat of the blast. The dried egg is scraped from the cylinders in a granulated form, very much resembling coarse corn meal, and is subjected to a subsequent curing process which lasts about thirty days. The dessicated egg readily dissolves and returns to its former condition of "batter" when the requisite proportion of water is added, and thus, if beaten the same as fresh eggs, it gives the same results in cooking. As five hundred dozen of dessicated eggs are packed in a single barrel, the saving in transportation is enormous, and the other savings from loss by breakage, decay, &c., can be more easily imagined than estimated.

Sundry Humbugs.

We have before stated that, however we may feel indignant at the folly of those who allow themselves to be victimized, there is much in the Humbug correspondence to touch our sympathies. It often happens that people, too honest themselves to be suspicious of others, are tempted by plausible offers to invest all their little means in some scheme which proves to be a swindle, and when they become aware of the fact, they write to us for help. Of course, money lost in this way is irrecoverably gone. The letters setting forth the loss, show so much real distress, that we have not the heart to say: "Served you right, you ought to have known better." Though we treat many cases with ridicule, that being the most efficient method of showing them up, the writing up of the "Humbugs" is by no means a pleasant occupation. We probably read 20 or 30 letters for every one mentioned in these columns, and this correspondence is not calculated to put one in a cheerful mood, or to give him an exalted opinion of human nature. To spend hours in going through our monthly accumulations of letters, and to read continuously of schemes of fraud on the one hand, and the complaints of victims on the other, interspersed by questions from persons, as to whether this or that scheme is a humbug or not, is almost enough to make one, for the time being, think that mankind are divided into two classes, the knaves and their dupes, and we turn from the task, when completed, with the same feeling that one leaves a hospital, which he has visited as a matter of duty. Still there is now and then

A GLEAM OF FUN

to be met with; perhaps rather sombre fun, but still a relief from the otherwise unbroken sadness. The chap who offered for 25 cents to tell how to write without pen or ink, has met with a rival. The information which this chap gave—"Write with a pencil"—was perhaps worth the amount to one who did not know it before. A later one—or it may be the same in a new guise—proposes for the same modest sum of one-fourth of a dollar, to tell people "How to get rich," something at all times desirable to know, and in these times of general dullness likely to be eagerly sought after, and we have no doubt that the quarters came in so rapidly, that the advertiser, if no one else, became more or less rich from the advertisement. The recipe returned for the money is: "Increase your receipts, and decrease your expenditures."——Volumes could not tell more, and on the whole, we doubt if we are right in putting one who gives so much for the money, in the Humbugs at all. This man is an improvement upon the New England Judge, who said: "The most compendious way of making money is to buy goods very low, on a long credit, and sell them very high for cash"— — but this advertising man is the "compendiousestest."....An eminent professor in a leading University writes "I get

MANY CURIOUS LETTERS,

but this is one of the most curious," and incloses the following from a town in Saratoga Co., N. Y.: "Dear Sir, could you charge a peasc of steel or iron with electricity for the purpose of mineing, I would like a bar about 3 ft. long and 1 in. in diameter charged for lead, silver, and gold," and wants to know the cost, etc.—Here is the cropping out of a humbug, that has existed in one form or another since very early times—the divining rod, which has been used by those who pretend to discover not only water veins, but metallic veins below the surface. Originally the divining rod was of hazel; in this country Witch-Hazel is used, (but in this case "witch" is from "wych," of very different meaning, and has nothing to do with sorcery), and sometimes metallic rods are employed. Electricity is made responsible for many absurd things, it being very common for people who are too conceited to say "I don't know," to ascribe phenomena that they can not explain, to electricity, and we have no doubt that the writer of the above letter is honest in his belief, that a rod can be so "charged," as to discover metals, and that the charge can be varied to suit the different kinds of metals. Men of respectable standing in the community, even professors of religion, who have "renounced the devil and all his works," have within our knowledge employed "water-witchers," to point out the place for digging a well, and we have even known persons, who have had what is called a "liberal education," to believe—or say they believe—in the efficacy of the divining rod. When men who should know better, countenance such folly, we can not wonder that those with fewer advantages should believe in divination..... The old fable of

THE MONKEY, THE CAT'S PAW, AND THE CHESTNUTS,

finds its application in some of our correspondence. One, in writing us about a swindling affair, says: "Now I want to have you do your duty, and expose these rascals, or *I shall lose confidence* in you."—The italics are his.—Just see what follows: "I do not want to have you reveal to any one my name, as it might get me into trouble." A jug-handle is not the only one-sided thing in this world. Our correspondent must not be got "into trouble," but it is our "duty" to get into trouble by exposing the persons he says have swindled him. We fear that we must "lose confidence," rather than purchase it at that price. ....As a general rule it will be safe for

FARMERS TO REFUSE ALL AGENCIES,

as the risk of getting swindled is altogether too great. Traveling agents come along, and propose to farmers to take an agency to sell this or that thing. The story is a plausible one; the farmer is to be the only agent in the vicinity, the goods are of a salable kind, and need not be paid for until sold, while the profits, to the farmer who sees but little ready money, seem so liberal, that the offer is a really tempting one. Still we say, don't do it. If all were as represented, it would be another thing, but there is quite sure to be a catch somewhere—some "artful-clap," as old Col. D. used to say, and the chances are so great that a traveling agent of this sort is a swindler, that it is the safest to give them all a wide berth. One lady in Illinois writes that the agents of a washer of some kind were along, proposed to make her husband agent, and to leave two or three machines; so far all was right; but before they left, they wanted him to sign a note for two dozen more, which were *to come*. Having read our cautions, the husband would not sign the note. The fact that the agents claimed to be from Indianapolis, while letters must be directed to New York, and their circulars were printed in Iowa, made the lady think that they were too much scattered to be safe.

THE SPRING BED SWINDLE

is another of these agency affairs that farmers should look out for. It appears to be mostly carried on in New England. A smooth-tongued chap comes along to establish agencies on behalf of the manufacturer; he finds some one willing to act as agent for the sale of the goods, from whom he gets an obligation to pay for the goods when sold, and an order for the goods to be sent. The beds come, the agent pays freight, and takes them home. In a few days a party claiming to be the manufacturer comes along to collect the bill. The agent says that the goods were only to be paid for when sold, but this is laughed at; they never sold goods in that way; no one had authority to make any such terms; there was the agent's order for the goods, and there was the bill (some $200 or $300), and if it was not paid at once, it would be put in the hands of a lawyer for collection. The pretended manufacturer understands the bluff-game, and too often succeeds in frightening his victim into paying the bill, or in settling the matter by giving him $50 to take away his beds. One of our readers, who had accepted the agency, and was called upon and threatened, wrote us for advice in the case. Our advice was to stick to the agreement, and let him sue. We afterwards learned that a lawyer from a neighboring town came to collect the bill; finding he could not get the amount, he proposed to settle for $75, then for $50, and then for $25, and take the beds back, but our correspondent would pay nothing, and agree to do nothing, except take the beds to the depot, which he did, and comes out of the transaction minus the freight he paid when he took them. This shows that in such cases

FIRMNESS IS A GOOD INVESTMENT.

We have heard of four instances in as many other towns, in which the victims were bullied into paying. But what kind of a lawyer was that who was aiding and abetting a swindler from another State in trying to squeeze money out of his own neighbors? It strikes us that a highwayman who boldly demands your money is rather the more respectable of the two....Here is an

OLD SWINDLE REVISED AND IMPROVED.

We some months ago showed up the nice little ways of the "Mercantile Prize Association," which sent out notices all over the land, in which the one who received the document was informed that he had drawn a melodeon, valued at $125, which would be forwarded upon the receipt of $7.50 for express charges, packing, etc. We have not heard of the concern of late. Can it be that that was the grub, of which we have now the full-blown beautiful butterfly of the

GREAT PRIZE DRAWING ASSOCIATION OF AMERICA?

The other was only a poor one-horse Yankee concern; this is of the Dominion of Canada, a part and parcel of that Empire, whose "morning drum-beat" * * "circles the earth," etc., etc. None of your trumpery melodeons this time, but a full-rigged piano—worth no paltry $125—but a round $500—and all to be had for sending $5. Yankee swindler, bow down in deference to the immense superiority of your Canadian brother. The gentleman who sends us the circular is indignant that it should have been sent to his son, "who never had any such ticket."—Good sir, these swindlers know poor human nature better than you seem to; they know that these circulars appeal to the cupidity of those who receive them; they know that hundreds will not stop at the fact that they never had a ticket, and admit a lie, in the presence of the offer of something worth $500 for $5. Hundreds send them $5—get no return, and feel that they have been swindled. As they were willing to take advantage of the statement that their ticket had drawn a prize, when they knew that they had no ticket, we do not think it much better than a case of the pot and kettle....Having heard nothing of late of

"THE SILVER MOUNTAIN MINING COMPANY,"

when a couple of months ago every mail brought inquiries, we supposed it had gone the way of all such things. But recently the "N. Y. Times" has devoted special attention to the company, and as we get so little help in the Humbug war, we with pleasure acknowledge that it has treated this case very thoroughly and exhaustively in its issues of June 25th and July 2d. It seems that the office of the concern has been moved from far up Broadway to far down the same street, and has continued to send out the same attractive circulars, and issue certificates of stock, which represents lots of mining going on in the engravings, even if there is not so much as a hole in the ground at Silver Mountain. The investigations of the "Times" reporter show that it is simply an old foe with a new face, another devel-*ope*-ment, (as Agassiz used to say,) of an old deviltry. That

THE SILVER MOUNTAIN MINING COMPANY, THE WYOMING LOTTERY, AND OTHERS,

are all off of the same piece of goods, and the same persons are concerned in all these, and perhaps other swindles. The heads and front of all, according to the "Times," is Pattee, widely, if not well known in Wyoming, Kansas, and there away; and Elias, with a more Eastern, if not a more aromatic reputation, is another. When such men are connected with an enterprise, the "Times" is safe in saying that it is "a swindle of the most impudent character," and that "their mine is in the pockets of the unwary."

MEDICAL MATTERS

seem to go down as the mercury goes up—of course we don't refer to the medical "mercury," but that in the thermometer—and supreme dullness reigns. Every now and then we hear from some one who says that he or she has been acting as an agent for some stuff, is threatened with prosecution for money due, and ask us to send proof that the medicine is a humbug. We do not profess to give legal opinions, but common sense would dictate that such persons should comply with whatever agreements they have made. If they took the stuff and contracted to sell it on certain terms, we doubt if any court would "go behind the returns," as the politicians say, and consider the character of the medicine. We advise all such persons to settle according to the terms of their bargain, and never thereafter engage in the sale of any quack medicine whatever....We have alluded above to the pathetic aspects of our correspondence relating to humbugs; no where are these more frequently exhibited than in those relating to medical humbugs. The harm these do is not solely bodily, but they are the cause of much

MENTAL ANXIETY AND DISAPPOINTMENT,

as the circulars relating to them are filled with assertions so positive, and set forth the special virtues of the stuff in terms so glowing, that the reader, not knowing that the same is done in a hundred or more others, feels that he would do wrong not to heed them. We have before us a letter, which shows in form and manner that the writer is of more than ordinary intelligence. He says: "Consumption has made sad havoc in my family, the last victim being a daughter of 19 years of age, and the end is not yet."—Seeing a medicine attractively advertised, he sent for a circular. The circular came, and he wrote to a number of the persons whose certificates were printed in it, asking about the medicine, and in every case, save one, his letters were returned as uncalled for. This made him suspect the genuineness of the certificates, and he wrote to ask our opinion as, if not his own, the hopes of some members of his family are strongly fixed upon this medicine as a relief from a dreadful disease. One can not dispel such hopes without a deep feeling of sadness, and a keen regret that for the mere sake of making money, any one should be allowed to raise such anticipations in a grief stricken family. It is hard in such cases to be obliged to say what one thinks, and thus cause great disappointment, but it is better that that should come in this way, than at the end of a long and fruitless trial. The loss of money is one of the least evils that these quacks cause... Who has not experienced the joy of meeting a long absent friend! Who has not felt the keen pleasure of a return after a prolonged absence from home, these make the heart leap, but for a real thrill of pleasure, that shall make the blood course rapidly, and tingle every vein, artery and nerve, from the top of the scalp to the largest toe, he should see his nation's flag in a foreign land! A combined sensation—long lost friend, long deserted home, and the American flag, all rolled into one, comes upon us as we once more gaze upon the long unseen, but by no means forgotten

PORTRAIT OF EDWIN EASTMAN.

There you are Eddie, boy, the auburn locks gracing your marble brow! there are the marks each side of the Apollo-like mouth, where the cruel salvages branded you. Then there is your signature, just as you have written it at our desk, when you hadn't any marks on your face, and hadn't much of a marble brow to speak of, and told us how you and that other fellow got up the story.—But why spoil the narrative by saying that you have no wife? Don't the book say that you were captured with your young wife, and isn't there the picture of "The Medicine Man," which his name it is Wakometkla, who looks as if he had eaten too many cucumbers, but who taught Eddie to make the Bloody Indian Syrup—or Indian Blood Syrup, or something. While keeping the run of the wickedness of the world, as one must who records the humbugs, the work has its compensations, and one of these is to know that Eddie Eastman still lives.

Artificial Coloring for Butter.—We have tried various preparations for coloring butter, including the ordinary annatto, as kept in the drug stores, and several of the liquids put up ready for use by different manufacturers. While customers insist on a high color, it is necessary for dairymen to use artificial coloring, and the butter of some cows is so devoid of tint, that it is unsalable without coloring, although the flavor may be faultless. Some people taste with the eye, and for them appearance must be considered. While artificially colored butter brings 5 or 10 cts. per pound more in the market, than that pure from the cow, coloring matter will be used. Carrot juice is objectionable; most of the preparations of annatto are made with potash, and the unprepared paste is difficult to manage properly, although we have procured the finest tints by its use. We have recently tried a preparation made in oil, by Mrs. Smith, of Arch St., Philadelphia, an experienced dairy manager, which gives an unexceptionable tint, and being free from alkali, will the better please those who object to the alkali preparations. It is well to avoid too high a color, and in practice we have found that one half the quantity recommended to be used by the makers of the preparations, is sufficient. There never was red butter, and an excess of coloring produces this shade. A fine lemon-tint is the proper one, and in using coloring, it is best to err on the side of economy rather than excess.

Profit in Blackberries.—As an instance of the profitable use of one of the small accessories of the farm may be cited the business of gathering wild blackberries in the town of Salem, N. C. From this small town, of about 2000 inhabitants only, over three million pounds of this fruit was shipped last year, bringing into the town about $500,000. To utilize in this profitable manner one of the frequently neglected resources of the fields and woods, might add considerably to the income of thousands of families in various parts of the country where this fruit abounds.

Varieties of Wheat.—"T. K. M.," Mercer Co., W. Va. There are some varieties of wheat that are hardier than others, and better resist the attacks of fungoid diseases, such as rust and smut, and of insects. Amongst the old hardy wheats are the Treadwell and the Touzelle, and a newer variety, which has been very successful, is the Clawson. The first of these is a light amber wheat which makes an excellent flour; the latter are white wheats. As a rule, we have found the red and amber wheats the hardiest, and the white to be tender.

Ditching Plow.—"W. C.," Lockport, Ill. Ditching plows which cut the channel and throw out the earth upon one side, are the cheapest in the end, as they finish the work. Randolph's ditcher, recently described and illustrated in the *American Agriculturist*, is perhaps the most complete and effective implement of this kind. R. H. Allen & Co., of New York, have a ditching plow which makes a finished ditch. The New York Plow Co., and Ames Plow Co., whose addresses are given in the advertising columns, have cheap plows, which loosen the earth so that it can be thrown out with a shovel.

Management of Slow Breeders.—"C. A. S.," Washington Ter. There is no way of hastening the breeding of cows which are slow in this respect. The best method is to keep them in company with the bull constantly; it is often the case that the period of heat passes without being noticed. This will not happen when the herd is made complete by keeping a bull on the premises. It is best to get rid of slow breeders.

Thumps in Hogs.—"W. B.," Columbus, Ga. For this disease, which is inflammation of the lungs, or of the lining membrane of the cavity of the chest and lungs, nothing an be done but to give good nursing. Keep the patient warm, give drinks of lukewarm gruel and rub a paste of mustard and water upon the brisket and sides of the chest.

Building Cisterns.—"A. R. W.," Salmon Falls, N. H. We have given frequent descriptions and illustrations of cisterns in the *American Agriculturist*, for instance in Nov. 1875, May and October 1874, and August, 1876. Any one of these would answer to keep water for household purposes.

To Make a Pasture of Alfalfa in Colorado.—Las Animas, Col. To get a good stand of alfalfa upon dry soil, the ground should be deeply plowed and subsoiled, as this is a very deep-rooted crop, at such a season as will give the largest supply of moisture. The ground may also be thoroughly irrigated in the fall, and early in spring may be plowed, harrowed and sown in drills 9 inches apart; and then rolled with a corrugated roller so as to make water furrows between the drills. The crop may then be irrigated without danger of baking the ground, or if necessary, the ground may easily be cultivated between the drills. The Thomas Smoothing Harrow would serve a very good purpose, in mellowing irrigated land that has become baked, without injury to the young crop.

Fall-Fallowing.—"P.," Franklin Co., Mass. Fall-fallowing is useful where the soil is full of weeds and is inclined to clay, on light soils it is of no special benefit, except to clean the land, and as a timely preparation for spring work. Fall plowing may be done for oats and early potatoes with benefit, if the furrows are left high and rough.

All About Irrigation.—"W. A. C.," Wilmington, Del. The methods and effects of irrigation are fully described and explained in Stewart's "Irrigation for the Farm, Garden, and Orchard," published by the Orange Judd Co., price $1.50.

To Cook Egg Plant.—Every summer there are inquiries about cooking this vegetable, which appears to be new to many. Slice the fruit crosswise, about half an inch thick, peel and stack up with a sprinkling of salt between the slices, put a plate with a weight (a flat-iron will answer) on top, or lay the slices in strong salt and water. The object in either case is to remove a slight bitterness. At the end of two hours, dry the slices on a cloth, and dip in a thin batter of egg and flour, and fry to a light brown. Instead of the batter, dip first in beaten egg and then in cracker powder. Serve hot.

Fried Cucumbers.—Cucumbers that have grown too large to use in the ordinary way, even when they begin to turn yellow, may be sliced, and treated in the same way as egg-plant, but it is not necessary to salt them first. Many are very fond of them cooked in this manner.

Green Corn Pudding.—Grate the corn from four good-sized ears; add one pint of milk, two well beaten eggs, and a piece of butter the size of an egg, salt and pepper to taste. Stir 3 tablespoonfuls of flour in a little cold water, add it to the rest, beat all well together, and bake an hour.

Pleurisy in Pigs.—"L. B. M.," Elmwood, Ill. Pleurisy is distinguished most conspicuously by a labored breathing, with excessive action of the muscles of the abdomen—otherwise heaving of the flanks—a loss of appetite, unsteady gait, and frequent lying down and rising. It may often be relieved by careful nursing, shaving the hair from the chest, and rubbing mustard plaster, or a large linseed poultice over it; and if medicine is given, it should be first one ounce of castor oil, followed by half an ounce of sweet spirits of niter, daily, until a change occurs. A tablespoonful of powdered gentian may be given alternately with the niter. The food should be thin oatmeal gruel, given cold.

Value of Muck.—"C. W. P.," Bernardstown, Mass. Muck is of much more value than sand as an absorbent in stables, in proportion to the amount of vegetable matter contained in it, which adds to its value as a fertilizer. Manure, made by using muck as an absorbent, may be harrowed into the surface, which is the best manner of using it.

Oleo-Margarine.—"G. B.," Broome Co., N. Y. A constant reader of the *American Agriculturist* should not have missed our very frequent notices for some years past regarding oleo-margarine. The *American Agriculturist* was the first journal to call attention to the manufacture, as an objectionable and injurious competitor with dairy products, and in spite of much adverse criticism, has continued to oppose its sale as butter, or as cream in cheese. Many respectable agricultural journals have aided us in this steady opposition, and it is due to these efforts that an act of the Legislature of New York was passed, to forbid the sale of the article as a dairy product in the State of New York. The process of manufacture has been so frequently described, that we can not now repeat it.

Beardless Barley.—"W. J. T.," Dade Co., Mo. We have had no experience with the beardless barley. Like the hulless oats, we consider it a variety that is not worth cultivation. The six-rowed barley is considered the most profitable for sale, and the two-rowed for use as feed. Barley is too much neglected as a feeding crop, considering its value, and its ease of cultivation.

Basket Items continued on page 313.

Lost in One Year $20,000,000, by the Farmers of the United States.

Statistics show that the losses of swine of all sizes amounted in only 12 months to 4,000,000 animals, which, at a moderate estimate, were worth $20.000.000. This money was not lost through any fall in values, but an actual destruction of property. The loss fell solely upon that portion of the community, which, as a general thing, are less able than any others to bear it—the farmers. The most unsatisfactory feature about it is, that it is a loss that might have been, in a great measure, avoided, had the farmers been well informed as to its nature and means of prevention. The death of these millions of swine is ascribed to "Hog Cholera," a term given to diseases, or various manifestations of one disease, which, however the symptoms may differ, all agree in being rapidly fatal. In Coburn's "Swine Husbandry," now just published, will be found the most complete account of "Hog Cholera," any where obtainable; this includes the investigations of able veterinary surgeons, and the experience and views of distinguished breeders. The disease is of more frequent occurrence in the valley of the Mississippi than elsewhere, probably for the reason that there are more swine there. While the disease runs its course very rapidly, and is not readily curable, all agree in regarding it as preventible, as it is due to causes which may be avoided. What is known as "Hog Cholera" is attributed, and with good reason, to two chief causes: improper feeding and want of care. The life of the hog consists of two periods: the growing and the fattening stages. While it is admitted on all hands that there is no grain so valuable, in this country for fattening, as Indian Corn, and that this crop can not be so profitably disposed of in any other form as in that of pork, it is not well calculated for building up the frame upon which to lay the flesh and fat, as other foods, and the chief predisposing cause of disease is the constant and unvaried feeding with corn from the time the pigs are weaned, all through their period of growth. The food is not favorable to a healthy growth, and one of the important steps in the prevention of "Hog Cholera" is to give the animals a variety of food, while making their growth, especially pasture and green food in other forms, with other grains, artichokes, and other less concentrated food than corn. Feeding in this manner produces a more healthy and vigorous animal, and one better able to resist disease than one fed exclusively on corn, which both practice and science teach to be inadequate to supply all the wants of the growing animal. The second cause of disease is crowding and want of a proper sanitary condition of the herd. We have not space here to enumerate all the conditions that should be, and can be avoided; improper sleeping and feeding arrangements, impure water, and filth generally, may be regarded as the chief of these. There is but little wonder that animals improperly fed from the start and exposed to every predisposing condition that the ingenuity of carelessness can contrive, should be subject to epidemics of the most fatal character. The disease, having been prepared for through many months, when it comes is so rapid in its course, and so fatal in its results, that very little help can be hoped from remedies. Mr. Coburn's "Swine Husbandry" discusses these points in full, and shows plainly that these losses to farmers, which sum up in such a fearful aggregate, are due to diseases which may be avoided by proper and inexpensive care, and were it only for the teaching of this important point, and showing how it may be reached, the book would be of great value. We are convinced that were this work in the hands of farmers generally, and they would heed its teachings, the number of millions of dollars would be speedily reduced, and that "Hog Cholera" would soon cease to be the frightful scourge that it now is.

Catalogues Received.

IMPLEMENTS, FERTILIZERS, ETC.

A. B. FARQUHAR, York, Pa., Pennsylvania Agricultural Works, issues a finely illustrated and comprehensive catalogue, including everything in the shape of a tool, utensil, or implement, needed on a farm.

A. J. NELIS & Co., Pittsburg, Pa., wrought iron fences and gates, in addition to their well known horse hay fork, grapple, and other useful matters, make a specialty of ornamental wrought iron and steel gates and fences, of a variety of plain and finished patterns, costing actually less than some wooden ones.

ALEX. SPEER & SONS, Pittsburg, Pa. Plows and harrows of various kinds.

BLAKE, BEEBE & Co., Racine, Wis., makers of the Champion Fanning Mill, claim to have the largest manufactory of these machines in the world. This mill cleans all kinds of grains, seeds, and castor beans, and is therefore found widely useful.

SPEAKMAN, MILES & Co., Westchester, Chester Co., Pa., manufacturers of Embree's Rotary Butter-worker, and folding butter molds with press for making and printing square cakes. Also a revolving duster for sprinkling Paris Green upon potatoes.

EDWIN BAYLISS, Massillon, Ohio. The Massillon-harvester, Riding-wheelbarrow.

CURTIS GODDARD, Alliance Ohio; the little speedy corn sheller which weighs only 8 pounds, and is said to shell 10 bushels of ears per hour.

MOHAWK AND HUDSON MANUFACTURING Co., Waterford, N. Y., makers of the Dodge Excelsior Hay and Cotton Press with which 10 tons of hay can be made to go into an ordinary grain car.

JAMES LEFFEL & Co., Springfield, O., makers of James Leffel's Double Turbine Water Wheel, issue a large catalogue of over 100 pages, abundantly illustrated, and containing much interesting matter relating to the use of water as a motive power.

LIVE STOCK—POULTRY, ETC.

BENSON & BURPEE, 223 Church st., Philadelphia, issue a finely illustrated catalogue of all kinds of live stock, cattle, sheep, pigs, and poultry.

J. C. LONG, Jr., 39 Ninth st., Philadelphia. Catalogue and price list of pure-bred fowls and pigeons.

W. H. CUMMINGS, Milldale, Conn. Pure-bred Plymouth Rocks.

THE DAIRY.

THE VERMONT FARM MACHINE Co., Bellows Falls, Vt., issue a treatise upon the manufacture of "gilt-edged" butter, which is descriptive of a system of deep can setting in coolers, by which the cream is kept sweet and raised very quickly.

MRS. B. SMITH, 327 Arch st., Philadelphia, a little pamphlet descriptive of her butter coloring, which is prepared with oil, and also containing many useful dairy recipes.

Bee Notes for August.

BY L. C. ROOT, MOHAWK, N. Y.

One of the principal interests of the present month is the care of surplus honey. It should be kept in a cool dry place. Box honey should be examined occasionally, and if moth-worms are found, they should be picked off and destroyed. Extracted honey may be stored in tin or wooden vats, or casks; if wood is used, it should be first coated with wax. Hives that have cast swarms should be examined to ascertain if they have laying queens, as the young queen will at times be lost when the hive contains no brood from which the bees may rear another. If a hive should be found without a queen, one should be supplied, or brood be given them, from which they may rear a queen. A hive that has been queenless will often contain so much honey that the queen will find but little empty comb for brood rearing. In this case the honey should be removed with the extractor. Hives that are not queenless may often be benefited by removing the honey from the center combs, which will allow a much larger number of young bees to be reared.

Questions and Answers.

Excess of Drones.—"I have a great many drones in some of my hives—how can I get rid of them?"—An excess of drones should be prevented by removing nearly all drone comb, thereby preventing their hatching. They may be separated and destroyed by shaking or driving the bees into an empty hive or box, of the same size as the hive containing the bees. Place on the box a piece of wire-cloth, which is just coarse enough to allow the queen and workers to pass through, or a board may be used in which a hole is cut, and over the hole nail narrow strips of tin at proper distances apart. Set the hive over the box, when the queen and bees will pass up, leaving the drones, which are too large to pass through the opening, in the box below; the hive may then be removed to its place, and the drones destroyed. It would be preferable to find the queen and place her in the hive above, as the bees would the more readily pass up.

Natural or Artificial Swarming.—"Do you prefer natural or artificial swarming?"—I very much prefer artificial swarming, which is done by driving, or shaking the queen and a part of the bees into a new hive, placing it where the old hive stood, and removing the old one to a new position.

Driving to a New Hive.—"I desire to drive my bees from my old box hive to a new and more modern one?"—The time to change bees from box hives to those with movable combs is in May, yet it may be done at this season. For directions for transferring, see Notes for May, 1876. The hives referred to by D. H. should be transferred to the frames as shown in Notes referred to.

Frames for Extracting.—"Can the honey be extracted as readily from the standing Quinby frame as from the hanging frame?"—Yes, I think better, as it is a stronger frame.

Questions on Hive Constructions.—"When 16 frames are in place in the new Quinby hive, do you use panels at the sides?"—No, the frames just fill the hive. ...."Are the panels to be cleated when only ⅜ inch thick, to prevent warping?—Yes, put a cleat at each end...."How wide should the hoop iron be that the frame hooks on in the rear and rests on in front?"—1⅛ inch wide...."Should the outside case be cleated?"—Yes, a cleat two inches from each end of the sides and ends...."Is there any way to contract the entrance?"—A block may be used, or it may be partly filled with paper...."Should dowels be used to hold the case in place on the bottom board?"—Yes, one in the center of each end.

A correspondent from N. C. writes of the condition of bee-keeping in his State, to whom I would reply: You first need a hive with movable frames, to which your bees may be transferred, or new swarms may be hived in them. You can then take your surplus in a desirable shape, in small boxes, or with the extractor. The questions in regard to queens and queen rearing, will be most fully and accurately answered by republishing one of the most able papers ever prepared by the late M. Quinby upon this subject. With the consent of the Editor, it shall appear some time before next season's operations commence.

Paraffin and Seeds.—The English papers contain accounts of soaking peas and other seeds in paraffin, to prevent their destruction by insects and birds. One correspondent wishes to know if the heat necessary to melt the paraffin will not injure seeds. His question is a very proper one, as paraffin is really a solid, like wax, which could only be used in the melted state, and it would probably have no protecting effect. The trouble rises from an incorrect use of terms. The illuminating oils, that we call kerosene, are in England known as paraffin oils, which have by usage come to be called simply paraffin. If our correspondent wishes to experiment, let him use kerosene, and he will be able to see how far the method of the English gardeners will answer here.

Purslane on the Table.—Every one who has a garden knows the common purslane or "pussley" as a persistent and troublesome weed, but we have met with very few who knew that it had its uses, and that it was capable of making an acceptable vegetable for the table. Indeed, in France, the plant is cultivated for the table, but we, unfortunately, do not need to take that trouble. Those who wish to try it should select vigorous plants that have grown quickly in rich soil, and use the leaves and tender stems, rejecting the tough portions of the stems near the root. Boiled, and dressed with butter, in the same manner as spinach, it is no mean substitute for that vegetable, and can be had in the hot months, when that can not.

Fruit in England.—The weather of spring was very disastrous to all out door fruits except apples, which it was supposed had escaped; we see by recent papers that the apples, from some unexplained cause, are falling to such an extent, that it is feared that these will also be a very short crop.

The Peach Crop.—Randolph Peters, Esq., of Willmington, Del., who keeps a very close watch of the peach-growing districts of Delaware and Maryland, informs us, (June 29th), that the estimates made earlier in the season, are not likely to be borne out. Lately the fruit has fallen to such an extent, that it is now thought that the quantity sent to market will not be greater than that in 1875.

Ogden Farm Papers.—No. 90.

BY GEORGE E. WARING, JR.

I have the following from St. Paul, Neb.: "I see by a late article that you have had experience in pumping large volumes of water by wind-mill. We in this region (Central Nebraska) are greatly interested in methods for raising water for irrigation. The most of the streams and valley lands are not well located to irrigate by ditching, and, in fact, it would be hard to get enough of the inhabitants to pull together to accomplish it, so that the only course left seems to be for each one to raise his own irrigation water. This country is primarily a stock region, but a certain amount of grain must be raised even to raise cattle successfully. I have ventured to write you to ask, if you can not and will not write and illustrate in the *American Agriculturist* an article, or series of articles, explaining in detail the methods of raising large volumes of water by wind power—*i. e.*, sufficient quantities to irrigate from 10 to 40 acres. It would interest the people of a very wide scope of country west of the Missouri. We have very excellent wind-mills built in the West, but they are all so very expensive, (*i. e.* those which develop any power,) that they are mostly beyond the means of the people of this country. What is wanted is a wind-mill device of simple construction, that can be built on the farm at small expense, and that will raise a volume of water from 8 to 12 inches diameter, to a hight of from 15 to 30 or 40 feet, with a velocity of say 200 feet per minute. Information on the best and most desirable form of pump would of course be of interest. There was an Archimedean screw pump advertised some years ago. Has it proven a success?"

Of course, I am interested in all such questions as the above, and give them the fullest possible attention. The service that it is proposed to perform is by no means a light one. Taking the lowest estimate: a pipe 8 inches in diameter, rising to a hight of 15 feet, discharging water at the rate of 200 feet per minute, we have a duty requiring two (2) nominal horse-power. Or taking the extreme case: a 12-inch pipe, rising 40 feet, and delivering at the same velocity, we have a duty of twelve (12) nominal horse-power. In both of these calculations there is no allowance made for friction, which is more or less important, according to the size of the water-way of the pump used. Practically, even with the large pump, it would not be safe to depend on less than two-and-a-half (2½) horse-power for the smaller service, or fifteen (15) horse-power for the larger.

To raise such a large volume of water by wind power, as the larger instance calls for, about 160 cubic feet per minute, against a head of 40 feet, would be a severe tax upon an ordinary wind-mill, and for what requires a very large and costly mill, it would certainly be better to use a fifteen (15) horse-power steam-engine. The smaller amount, about sixty-five (65) cubic feet per minute, might be raised by a Fijnje pump, by an 18-foot wind-mill, working in a breeze of not less than 15 miles an hour. Such a mill would cost $250, aside from the cost of the tower and pump. It is doubtful, whether a wind-mill to perform this service accurately and well could be build for much less on the farm, where it is to be used, and a home-made mill would hardly be self-regulating, so that it would require an amount of attention, that would cost more than the interest on the purchase. If, however, it is thought best to make a wind-mill at home, and save the cash outlay, I should then recommend the form used by the millers on this Island, who grind corn by wind power. This is the familiar, old-fashioned, four-armed mill. The arms would have to be at least 12 feet long, and they should be provided with lattice-work, bearing canvass sails, 2½ feet wide. It would be practicable to make a mill of this size, with a vane to turn it toward the wind, but anything larger than that would have to be turned by hand. In any case, the sails would have to be furled and unfurled by hand.

The pumping mills, so largely used in Holland, where they raise the water by paddle-wheels, have only about a four-foot lift. Each mill, with its pump, costs about $10,000, and requires the supervision of an attendant, who lives in the mill-house. If the Archimedean screw is used, the lift may be doubled, but the amount of water discharged is proportionately less. A steam pump, to perform the service required in the larger instance given above, would consume about four pounds of coal per horse-power per hour. Rather than use a wind-mill or steam-engine, it would be better, if practicable, to go to the expense of making a long canal, tapping the stream at a higher level, and delivering the water by gravitation.

As to pumps, the Archimedean screw is as old as history, and is very efficient for raising water to the hight of 8 or 10 feet. For greater hights, it has serious objections. The Fijnje pump is very simple, and has a very large water-way, so that less allowance need be made for friction, and for disturbance of the current, than in the case of any other, but for working under a head of 40 feet, it would require special provision for strength, and would consequently be somewhat expensive.

The fact is, that to raise a sufficient amount of water for the irrigation of any considerable tract is hard work, which requires substantial appliances, and ample power. That it would be profitable under the circumstances named, I have no doubt, but that it can be easily and cheaply done by any home-made contrivance, is doubtful, and unless the appliances are adequate to the conditions, it had better be left undone.

The best service that I can render on this subject is to call attention to the very excellent work on Irrigation, recently written by Mr. Henry Stewart, an associate editor of the *American Agriculturist*, and published by the Orange Judd Company. It is the first American work on the subject, and a remarkably good one. Certainly, any man who contemplates the adoption of irrigation, should read the book as his first step. It contains arguments in favor of the process, which should be more than ample, and which ought to lead to the introduction of irrigation works all over the country. At the same time, it holds out no delusive hopes, and does not pretend that the great benefits offered, are to be got for nothing. Except in the matter of mechanics, it gives all that can be desired. It does not mention the Fijnje pump, (which was introduced to our notice only last year at the Centennial,) and it is much less specific, than it might be, on the subject of wind-mills—a subject which is attracting more attention, as the value of wind power for farm work is becoming better known.

Beyond the size of 18 feet in diameter, the wind-mills are only made with cog-wheel gearing for driving machinery, but doubtless a pumping mill could be made 24 feet in diameter, (having 6 horse-power in a 25-mile breeze,) at a cost of about $400. My preference would be for two 16-foot mills, costing $200 each, and working separate pumps. The cost of the pumps for the smaller size mills would be proportionately considerably less than for the larger one.

I became a practitioner and an advocate of the deep-can system of setting milk, during the first years of its adoption in this country. I got my first suggestion concerning it from a description in a German paper, of the practice of a Swedish dairyman, and immediately experimented with it. The trial proving satisfactory, I remodelled the dairy at Ogden Farm to suit the case, and have practised it ever since. I have never seen occasion to change my original opinion, that by this system we get all the butter the milk is capable of making; that there is very much less interference by the changing conditions of the atmosphere, than with the shallow-pan system; and that the amount of labor needed is very much less. I have had the satisfaction of seeing those who argued against it, become its advocates, and finally, to see the method adopted by inventors as the basis for patented processes. The Hardin and Cooley systems have come quite generally into favor. Dr. Ezra Michener, who in his early experiments found the cans greatly inferior to the pans, has since concluded that he did not skim his cans deep enough. In a recent number of the "Country Gentleman" he publishes the result of a comparative test between cans in a Hardin ice-box, and pans in a cool cellar. He found 21.50 pounds of milk yielded a pound of butter in the cans, and 21.93 pounds made the same amount in the pans, "the butter made was all good, but that from the cans had a peculiar rich flavor, which I have never found by the shallow-pan system."—Indeed, his communication may be taken as strongly in favor of the deep cans.

The Cooley system strikes me as being a very good one. The cans are filled nearly full with milk, covered with an inverted pan, and placed in a water-tight box, the covers being fastened down by weights or slats bearing upon them. The box or vat is then filled with water, so as to immerse the whole concern, covers and all, the inverted pans keeping out the water on the principle of the diving-bell. If desired, ice may be put into the water, and the whole concern is covered, to prevent the atmospheric warming, and the consequent waste of ice. There is no exposure to the air, to dust, and to flies. Ice enough is used to keep the temperature below 50°, until all the cream has risen—which takes place in less than 12 hours, so that one set of cans is all that is needed, when the cows are milked twice a day. The cans being nearly always submerged in cold water, and kept away from the air, they need washing only once a week. Mr. Albert Chapman, of Vermont, reports experiments with this system (Cooley's), where he took a can, at random, in which the milk stood 17½ inches deep, fully 4 inches being cream.

Two cans of skimmed milk, set for 48 hours, failed to throw up any appreciable cream. His trial was made in June, when the cows (about half-blood Jerseys) were giving their best flow. He made one pound of butter to 22.50 pounds of milk—certainly a very good result.

I have not determined to adopt the Cooley system, and, indeed, I find the simple deep cans, floating in cool water, so satisfactory, that I may not change. At the same time, were I about to start a new dairy, I should certainly arrange for the covering and total immersion of the cans under the Cooley patent, feeling sure the result would be as good as that now obtained, and that the freedom from exposure to the air is a decided advantage.

We have as yet no complete result to report concerning Prickly Comfrey. The sets planted last autumn were probably covered too deeply, and were very late in coming up—some of them are only beginning to show now, and others are probably rotten. Sprouted sets, planted this spring, are much more forward, and those which came the earliest, show a vigorous growth, which promises excellent results later in the season. The leaves are greedily eaten by horses, cattle, and swine, and there is thus far every indication that the statements of those, who have recommended the new plant, are sufficiently reliable, to warrant all who need green forage during the dry weather of summer—and who does not?—in setting out an experimental patch in September or October, so as to procure a good start before winter sets in.

Science Applied to Farming.—XXXII.

More About Seeds.—German Methods of Testing their Purity and Vitality.—Field Experiments with Fertilizers.

In the last article reference was made to the importance of investigations of seeds, as illustrated by examinations of those sold in England and on the Continent of Europe. As there stated, most remarkable results have come from the investigations of Dr. Nobbe, of the Experiment and Seed-Control Station at Tharand, in Saxony, whose example is being followed in a large number of Stations in Germany and other European countries. The importance of the subject will, I feel sure, warrant a brief outline of the methods recommended by Dr. Nobbe, and pursued at the laboratory here, especially as no description of them has, so far as I know, ever been given in English, except in the last report of the Connecticut Experiment Station, from which the following is condensed.

The sample of the seed to be examined is taken from the barrel or bag, with instruments made for the purpose or in such other way as to secure a perfect average sample. This, when brought to the laboratory, is thoroughly mixed and a small part of it withdrawn with very special precautions to ensure its representing the average quality of the whole. This portion, from 2 to 15 grammes, ($^1/_{15}$ to $1^3/_4$ ounces,) according to the kind of seed, is next carefully weighed, and then picked over by the examiner, seed by seed, with the aid of magnifying glasses and other instruments designed for the purpose. Each seed passes under the eye, the genuine seeds, those corresponding with the label under which they were sold, are put by themselves in one place, and the foreign matters, whether seeds, chaff, dust or sand, in another. The pure seeds are weighed by themselves, and the impurities also.

In this way we learn the percentage of pure seed. For instance, suppose we take four grammes of seed, and find after picking it over, one gramme of impurities, and three grammes of pure seed. We make then the proportions, 4 : 3 : : 100 : 75, *i. e.*, our sample contains 75 per cent of pure seed, and 25 per cent of impurities. The foreign seeds are examined botanically, to see if there are among them any which would produce parasitic plants or weeds poisonous to cattle. If there are, such an article should be at once rejected by the farmer. The germinating power of the pure seeds is next ascertained, as follows: Two lots of two hundred seeds each are carefully counted out, and, after being weighed, are allowed to soak in distilled water twenty-four hours. They are then transferred, the one lot to an apparatus of porous earthen ware, the other to a wrapper of bibulous paper.

The figure herewith represents Dr. Nobbe's apparatus for testing the sprouting power of seeds. It is made of burnt clay or earthenware, and consists of two parts, the base and cover. The base is about 8 inches square, and has in the middle a circular depression, about 4 inches wide and $^3/_4$ inch deep, which serves as a receptacle for the seeds. Around this "germinating bed," as it is called, runs a canal, a little over an inch deep, for water, which soaks through the porous material, and keeps the seeds moist. The base is glazed on the bottom, and part way up the sides, to prevent the water running through and wetting the support on which the apparatus rests. The cover is of the same material as the base, and fits over it like an ordinary paper-box cover. In order to allow circulation of air through the apparatus, the cover is somewhat wider than the base, and each interior corner is provided with a projection. It is thus prevented from closing down tight upon the base, and room is left on all sides for free movement of the air. A small aperture is left in the top of the cover, in which a thermometer may be inserted, if desired, for determining the temperature.

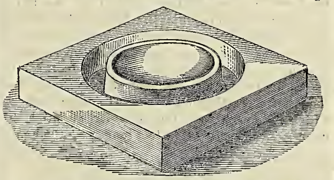

Fig. 1.—DR. NOBBE'S SPROUTING APPARATUS.

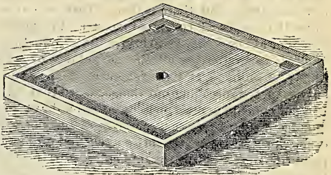

Fig. 2.—COVER FOR SPROUTING APPARATUS.

Suppose now that the seeds have been counted out, as above mentioned, in two lots of two hundred each, soaked, and one lot put into the moistened paper. The other lot are laid in the germinating bed of the apparatus, which is kept moist by the water in the surrounding canal, the cover is put on, and the whole set in a convenient place, where the temperature is fit for the germination of the seeds. From time to time the cover is taken off, the seeds are examined, and those which have germinated are removed. The date of each counting, and the number which had germinated, are entered in a book kept for the purpose. At the expiration of ten days or two weeks, in most cases, the trial is concluded. The number which have sprouted, all told, is found, and to it is added one-third of the number which have remained sound during the experiment, and yet show no disposition to sprout. The number is divided by two, and the quotient taken as the number of seeds in one hundred, *i. e.* the per cent which will sprout. The object in making two sprouting trials, one with the apparatus, and one with the paper, is to provide a check on any possible mistake, which might pass unnoticed in a single experiment.

As was said, these four hundred seeds were weighed previous to the sprouting trial. From this we calculate the weight of one thousand kernels. This is not an unimportant item in judging of the good quality of the seed. Heavier seed, other things being equal, is to be preferred to light seed.

From the percentage of pure seed in the sample, and the percentage of pure seed capable of germination, we calculate the "agricultural value," which expresses the percentage, or proportion by weight of the sample, which may be expected to furnish plants of the kind indicated by the label.

The report returned to the persons sending in the sample, will run as is illustrated by the following example:

The following is the result of examination of *Trifolium pratense*—RED CLOVER, received March 21, 1877, from John Smith, Middletown, Conn.

Pure seed	94.3 per cent.
Impurities*	5.7 per cent.
Pure seed capable of sprouting	89 per cent.
Agricultural value	83.9 per cent.
One thousand seeds weigh	1.59 grammes.

The seed is accordingly of good quality.

As was said last month, the tests made at our laboratory, indicate a remarkably favorable condition of the seeds sold in our markets, as to purity and vitality. But our examinations have not been extensive enough to enable us to judge accurately of the general state of the seed market, and where there is so much of opportunity for both innocent and willful wrong doing, a check must always be valuable. The interest is of too vast importance to the agriculture of the country, to be neglected.

I wish to add a word about the germinating apparatus above described, and particularly to invite the careful attention of sellers and users of seeds to its merits. All of the methods commonly employed for testing the sprouting power of seeds, are open to more or less objection in one way or another. When sand or earth is used, aside from the danger of presence of foreign seeds, and of improper covering, it is difficult to maintain a uniform and fit degree of moisture, while the process of germination cannot be watched without disturbing the seed. When paper or cloth is used, the seeds are liable to be disturbed, or come in contact with each other, or surrounding materials, in such way as to do injury, and there is danger that the covering will be allowed to get so moist as to exclude access of air, or so dry as to injure the germination. Nobbe's apparatus has all the advantages of simplicity, cleanliness, and convenience, offers abundant room for spreading out the seeds, so that they will not come in contact, while those that have germinated may be removed without disturbing the others, provides for the entire exclusion of light, plentiful access of air, maintenance of a proper temperature, uniform and fit degree of moisture, and allows the seeds to be examined at any moment and the whole process of germination to be followed with the utmost convenience, and with no danger of injury, whatever.

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* Consisting of chaff, broken seeds, and a little Swedish clover—*T. hybridum*.

I have just been out to look at a corn field on which the proprietor is carrying out a series of experiments, on the plan suggested in some of these articles last spring. So far as we could judge, the plots to which nitrogen, phosphoric acid, and potash were applied singly, are doing but little better than where no manure was added. On the one where nitrogen and phosphoric acid were applied together, in the form of a high-grade nitrogenous ("ammoniated") superphosphate, the corn looked very little better. But where the nitrogen, phosphoric acid, and potash were all used together as a "complete" fertilizer, the growth seems to be equal to that where a heavy dressing of stable manure was applied. But the appearance now, and the baskets and scales at harvest time, may tell two different stories.

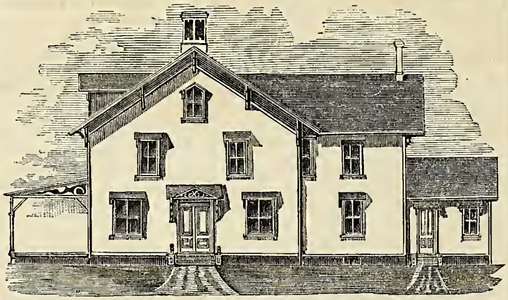


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

A gentleman who has been making a somewhat similar experiment on grass land in Virginia, reports that phosphoric acid, in the forms of bone-black, superphosphate, and fine ground bone, has given most excellent results, while potash and nitrogen in other fertilizers, seemed to be of but little use. I am very much obliged for these reports, and am looking forward with a good deal of interest to the full accounts from a large number of these field experiments when they are completed. Let me once more ask the gentlemen who are conducting them, to make their reports full and accurate as possible. I shall be happy to send more blanks for the reports, if desired. I feel sure that when the accounts are collected and compared, we shall be able to derive some facts and conclusions from them which will be valuable.

W. O. Atwater,
Wesleyan University, Middletown, Conn.

A House Costing $3,200.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a summer residence near Toms River, N. J. They are especially adapted to situations where the more pleasant views are to the rear, making it desirable to have the principal rooms on that side of the house.... **Exterior,** (fig. 1.)—The Swiss-like style is due to its bold roofs, wide projections, and rustic details of finish, there being no attempt at architectural display.... **First Story,** (fig. 2.)—The Hall, which is unusually large, is entered from the front porch through double doors, contains the main stairs, and communicates with the library, parlor, dining-room, and a passage leading to the kitchen. A Closet is finished under the stairs opening from the passage. The Library is nearly square, with openings in the center of each of its 4 sides, and is divided from the parlor by large folding doors. The Parlor is of good dimensions, has large windows opening to the floor, and leading to the piazza. The Piazza is 12 feet wide, affording shade and ample protection from storms, and may be used in pleasant weather to enlarge the capacity of the parlor. The Dining-room is entered from the main hall, and communicates through the pantry with the kitchen. The Kitchen has windows front and rear, giving a good circulation of air, and is furnished with a range, boiler, sink, and pump, connected with the necessary piping, with supply from the cistern. Private stairways lead to the second story, and to the cellar; the necessary pantries are provided. The one-story Addition is divided into three parts, making a work-room or shed, inclosing the well; a servant's bed-room, and a store-pantry.... **Second Story,** (fig. 3.)—This story contains a hall, 5 good-sized chambers, 7 closets, and a bath-room. The Hall has 9 doors leading to the several apartments, 2 stair landings, and a window, while it occupies but little space. The Bath-room has a bath-tub, seat-closet, and pipes for cold and hot water.... **Attic,** (fig. 4.)—A Hall and 2 Chambers are finished in this story. The stairs leading to it are inclosed, and have a door at the foot. The hall is lighted by a dormer window in one end. At the opposite end a door leads to the space under the wing-roof, where the tank is placed, immediately above the bath-room.... **Construction.**—The hight of the cellar is 6½ feet, of the first story 10½ feet, of the second story 8 ft., of the attic 7 feet. The Foundations are of brick-work, and show 2 feet above the final grades. The Chimnies are of brick-work, and have 6 open fire-places, with hearths to each, adapted to the use of either wood or coal fuel. The Plastering is "hard-finish," on 2 coats of brown mortar. Stucco cornices and centers, of simple design, are put in the first story of the main house. Marble Shelves with stucco truss-supports are put above each fire-place. A well and cistern are included in the estimate. The depth of the former is put at 30 feet, as the average. To avoid the danger of the caving in of the sides while digging, it is best to make the excavation 4½ feet *square*, (not circular as is usually done.) Rough planks, 4½ feet long, with their ends notched half way across, are slid in to lock with each other closely against the banks, as the excavation proceeds, making this part of the work perfectly safe in any kind of earth. The depth of the well should be sufficient to secure at least 4 feet of spring water. Of course it would be impracticable to lay the brick-work under water that depth, and therefore a circular curb 3 feet 3 inches in diameter, and 6 feet long (inside measure) must be made of ordinary boards, with an interior 4-inch timber rim at the bottom, and let down into the well as soon as water is reached. The *rim* forms the foundation of the brick-work. After laying a few courses around, say to the hight of one or two feet, their added weight will force them, (curb and all) downwards under the water as fast as the depth is increased. The clear inside diameter, when finished, is 2 feet 10 inches; the top courses of brick, to the depth of 3 feet, should be laid in cement mortar—all others laid "dry." The Cistern is constructed entirely of brick and cement mortar, in the earth—7 feet across, and 8 feet deep in the clear. The Frame of the house is of spruce timber, siding of clear pine, beveled clapboards, laid on sheathing felt. Roofing of cedar shingles, laid "three thick" on spruce lath. The Cornices have projections of 2 inches for each foot of their hight from the ground, which is appropriate for buildings of this character, but is double that of the usual styles. These projections are ceiled underneath with tongued and grooved boards, and bracketed with chamfered timber trusses. Openings are made through the gable cornices to allow for the escape of heated air from under the roof. The Flooring is of 9-inch tongued and grooved spruce plank. All windows above the cellar have 1½-inch sash, and outside blinds. Doors are paneled and moulded. The inside trimmings are quite plain, single moulded with bold members. The upper framework of the piazza is left exposed on the underside, and is neatly dressed and chamfered. The first story stairs are strongly constructed of pine, with newel, rail, and balusters, of black walnut.

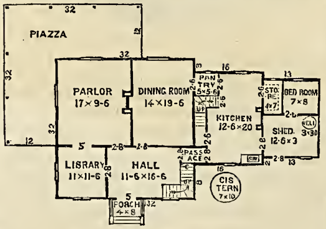


Fig. 2.—PLAN OF FIRST FLOOR.

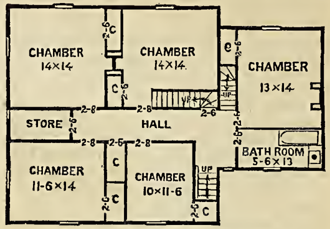


Fig. 3.—PLAN OF SECOND FLOOR.

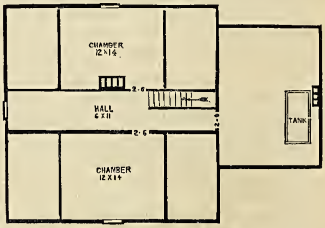
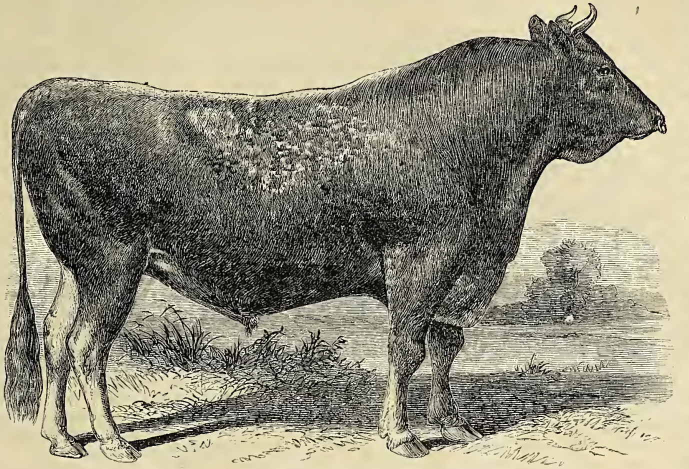


Fig. 4.—PLAN OF ATTIC.

Estimate of materials and labor:

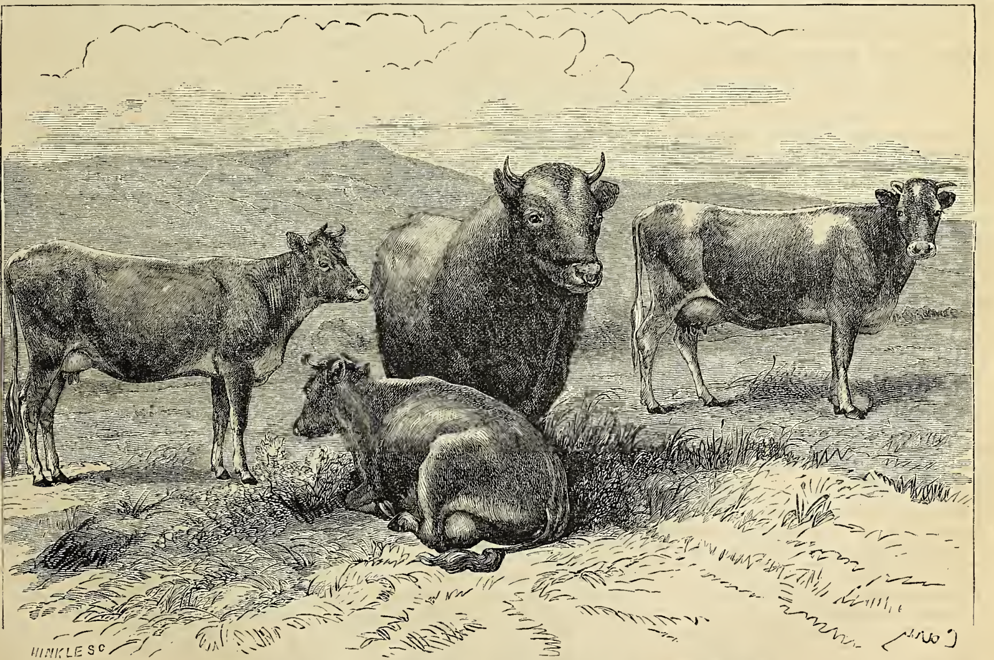
93 yards excavation at 25 cents per yard	$23.25
30 feet digging well, at $1 per foot	30.00
19,000 bricks, (cellar, foundation, chimnies, cistern, and well, furnished and laid, at $12 per M	228.00
4 barrels cement, at $2.50 per barrel	10.00
1200 yards plastering, at 28 cents per yard	336.00
5974 feet of timber, at $16 per M	95.60
1 girt, 4x8 in. 32 feet long.	
8 posts, 4x7 in. 20 feet long.	
45 beams, 2x8 in. 12 feet long.	
30 beams, 2x8 in. 17 feet long.	
35 beams, 2x8 in. 11 feet long.	
1 sill, 4x8 in. 313 feet long.	
1 plate, 4x6 in. 313 feet long.	
61 beams, 2x8 in. 20 feet long.	
20 beams, 2x8 in. 13 feet long.	
2 girts, 4x6 in. 30 feet long.	
700 wall strips, at 13 cents each	91.00
500 clapboards, at 14 cents each	70.00
350 shingling lath, at 6c. $21; 9,650 shingles, at 2c. $193	214.00
150 feet gutters, valleys, and leaders, at 10c.	15.00
1500 feet dressed lumber in cornices, at 4c.	60.00
513 flooring, at 27c. $138.51; 30 windows, at $12, $360	498.51
250 lbs. felt, at 5c., $12.50; 35 doors, at $10, $350	362.50
5 marble shelves, $6, $30; stairs, $100	130.00
Closet finished, $50; well curb, $12	62.00
Range and plumbing, $280; nails, $20	300.00
Carting, average 1 mile, $40; painting, $230	270.00
Carpenter's labor, $300; Incidentals, $104.14	404.14
Total Cost, complete	$3,200.00

The Echo Farm Herd of Jerseys.



JERSEY BULL "LITCHFIELD," THE PROPERTY OF FRED. R. STARR, LITCHFIELD, CONN.

We are indebted to Fred. R. Starr, of Echo Farm, near Litchfield, Conn., for the portraits of the excellent Jerseys which appear on this page. Mr. Starr's herd was brought prominently to notice through the award of the premium offered by the American Jersey Cattle Club for the best bull, to his bull "Litchfield," which is at the head of his herd. There is no doubt that this distinction was well bestowed upon this animal. The portrait here given is from a photograph, which, while it is a very excellent one, yet cannot do full justice to the animal. The "counterfeit presentment" of a photograph, however accurate it may be, gives only the form; the color, quality, and general character, must be seen to be properly appreciated. The bull "Litchfield," (No. 674, A. J. C. C. R.,) now we believe in his seventh year, is a remarkably massive animal. This is shown to some extent in the engraving by the heavy fore quarters, noble crest, and powerful head, but still better by the front view in the larger engraving. For a Jersey this feature is rare, but it is, to our thinking, of the greatest value as denoting extreme animal vigor and vitality, and great strength of constitution and stamina. A bull so endowed should be expected to stamp his peculiarities with great force and certainty upon his offspring, and this is precisely what is done by "Litchfield," as evinced by the evenness and regularity of the herd which he has helped to form. His son, a remarkably beautiful bull, which is his next neighbor in the stable, is almost a perfect counterpart of himself, in color, form, and quality, and promises, when he has become thoroughly developed, to acquire equal substance. "Litchfield" is a solid silver-gray, beautifully dappled, and darker below than above, where he is rather light. Although apparently a very heavy bull for a Jersey, he is only in moderate working condition, is far from being fat, and is long in body and well-proportioned. He bears all the marks of a productive butter stock; his horns are of a clear bright waxy yellow, and are very fine, and he is furnished with a set of very largely developed teats. The proof, however, is in his progeny, which are excellent milkers and rich butter cows. The herd numbers about 60 animals, and we selected at a recent visit to the farm, which was unfortunately much shorter and more hurried than we should have desired, three cows as specimens whose portraits are here given. To select one cow in preference to another for this purpose, was in this case simply a question of taste, for we have seen no herd so even all through in quality as this, and one cow might just as well have been selected as another. This evenness is so conspicuous a feature of the herd, that it appears at first sight, and is confirmed on closer examination. There is diversity of color, certainly, for there are all the beautiful and picturesque tints which belong to this beautiful breed, and Mr. Starr is no stickler for solid color or black points. Butter is his object, and he breeds for profit from that, and turns all his attention towards breeding cows that are profitable for the dairy. But in all else beside color there is great uniformity. There are no second-rate animals, and if one looks for a fine udder, or well-formed or well-placed teats, or any of the well-known points of first class Jersey cows, he may find them in the first cow seen in the pasture. In such a large herd as this, this is a remarkable characteristic. The cow on the right of the picture is "Bessie Allen," (No. 3,719); that in the center is "Chestnut," (No. 1,888), and that on



PORTION OF THE ECHO FARM JERSEY HERD, OWNED BY F. R. STARR LITCHFIELD, CONN.

the left is "Pride of the Village," (No. 3,833), a remarkably beautiful heifer, with her first calf. "Pride of the Village" was one of the herd exhibited at the Centennial. She is by "Litchfield," has his fine color, and is a very promising animal.

The management of this herd is a model that might well be adopted by many breeders. In the treatment of the animals the greatest gentleness and quietness are exercised; there is no loud talking in the stables, and the very common but purposeless vice of swearing is never practised here. The animals are tame and docile and are perfectly at their ease. There is profit in this as may easily be discovered on trial in other dairies. The regimen of the herd is calculated to ensure robust health, and although all the appointments of the stables and yards are calculated for the comfort and ease of the cows, yet they are trained to endure exposure to all sorts of weather. The herd is out nearly every day in the winter, for a longer or shorter time, according to the weather; are kept out in the field at night quite early in the spring and late in the fall. The stable is a marvel of cleanliness, the litter is white sand and the sanitary arrangements are excellent. This is the first herd that we have visited in which the arrangements for keeping the calves are such as the young and tender animals ought everywhere to have. The calf stable is furnished with a separate stall for each calf, the stalls are provided with mangers, ties, and gutters, the same as for the cows, and the stalls and stable are littered down with white sand. As the calf is the making of the cow, it is doubtless to this early training in the ways of healthfulness that the robust condition of the cows is due. Mr. Starr is always prepared to entertain visitors between certain hours in the day, and the herd is always to be seen in the field in working condition, none of the animals being ever gotten up for show as samples of what the others are not. To visit the herd would be highly instructive to any dairyman who desires to learn how dairy animals may be bred and managed, and very interesting to any breeder or admirer of the beautiful and useful Jerseys.

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Among the Farmers.—No. 19.

BY ONE OF THEM.

Insects.

The monotonous clamor of the 17-year locusts will be hushed before this is printed, but it is quite loud and harsh enough now, and our trees will be brown from the withered leaves of the injured twigs, but the pestilent *Doryphora* will still be at his work. The Potato-beetle comes early and stays late, and may be fought in every stage of its existence. We have to let the Cicadas have their own way, they will not eat, and only the birds can get at them. They have done us one favor, however, which is worth making a note of: not a crow or a blackbird has pulled a spear of corn so far as I have seen. They have been too well fed, I conclude, and this I set down to the credit of the locusts.

Foolish people continue to fear that the use of Paris Green will poison the crops or the soil, or something besides the Potato-beetles. If it would only affect the cut-worms we would rejoice throughout this section—but it will not. One chemist is reported to have said that, being insoluble, it would remain in the soil, and thus gradually accumulating might produce serious disease. Another, that water from lower sources than the land thus poisoned would not be safe to drink. I wonder somebody has not started an alarm about poisoning the air, for it is a fact, that whole families have been poisoned by dwelling in rooms papered with green wall-paper—Paris Green being sometimes used as a pigment in making paper-hangings.

My potatoes have suffered much more from the cut-worm than they have from the beetle, so far. One small field of Alphas, from which I expected great things, has been terribly cut to pieces. The planting was made with single eyes, and they started well, but being cut off as soon as they showed themselves above the ground, perhaps two or three times, I now find that the stalks decay, and the plant succumbs. Those plants which have not been cut off are ready to blossom, while others, and the majority, are just visible above ground.

We can destroy those worms which we happen to find where, and after, they have done the mischief, but that seems a small matter. It would appear that the more we kill the more we may. It is said that sods laid, grass side down, were good traps for them. I find a few do take shelter in such places, but I cannot sod a potato patch of two acres.

A Moth Trap.

I saw in the papers that the moth of the cut-worm might be caught by setting a lantern in a tub of water covered with a film of oil. This I have been trying, and believe it will prove a success. The cut-worm moth, if I know the fellow, is not flying now, but the multitude of flying things which cover the water were a sight worth seeing. Cockchafers, and a dozen different beetles, and moths, great and small, innumerable, and among them perhaps some friends, though I saw none. Still I consider the plan an excellent one, and *the game well worth the candle*, especially in gardens.

High Manuring for Peas.

My neighbor, Clark, a genius in his way, gets a great many good results which the world is no wiser for, unless he tells me, and I "ventilate" them for him. He has been experimenting in the matter of manuring peas. We are generally cautioned in the books against manuring heavily, lest the peas run to vines and we get too little fruit, especially from early peas. Mr. C. finds that the more heavily he manures his Tom Thumb peas, the larger they grow, and the more they produce. This is his favorite early sort, and he has vines 18 inches to 2 ft. long so loaded with peas that it is a pleasure to see them. I have no doubt it is with peas as it is with strawberries and some other things—different varieties will bear different treatment. Some strawberries can hardly be too heavily manured, while others so treated go all to vines and bear nothing.

The City's Filth.

This spring I took a run up into Connecticut. The passage to New London was a pleasure from first to last—a charming evening's sail with pleasant company through East River and the widening Sound, and a good night's rest fill up the measure of a pleasant night's trip. As we steamed out past Fort Schuyler, and entered the Sound, we ran for some distance through a stream of filth. What it was, and where it came from, was a mystery. The water around no "dumping dock" in the city ever looked worse. Some miles further on the mystery was cleared up. One of the city tugs, towing three or four immense "flats" was slowly working back to the city, while workmen, fairly swarming upon the flat-boats, were shoveling off the mixture of ashes, dirt, street sweepings, store and house sweepings, tin cans, and refuse of all sorts, into the water. The tortuous track of this unsavory flotilla could be seen for miles in the clear water by the light still lingering in the west. It seems as if some better use could be made of this material, a large part of which is of more or less value as manure, while the incorruptible portions are certainly useful within the city limits for filling-in purposes.

My course, after reaching New London, lay through parts of New London and Windham counties, and up into Tolland. The apple trees were in blossom, and the corn was up, a good deal of it, though farmers were still plowing and planting. Connecticut hills and valleys never looked fairer, nor the soil mellower, nor the crops better. I admit I am prejudiced in favor of New England things, and I would be glad to see all over the country, as good fences, as neat buildings, as clean culture, and as good cattle, as I was impressed with during that morning ride. At a little station on the Palmer road, I left the railway train, and a powerful bay made light of the long hills of old Mansfield.

The Storrs' Farm.

My errand was to see some of the Short-horn cattle belonging to Mr. Augustus Storrs, and very well pleased was I with the inspection. They are noble, deep-milking cows of the Yarico family, and remind one in style, stature, and udder, as well as pedigree, of the grand old cows of the Connecticut Valley breeders, which have proved their value not less at the pail, and in the hands of "common farmers," than when bred for beef qualities almost exclusively on the rich prairies of the West. At the head of the herd stands the fine bull "Earl of Sharon," 19,701, by "The Doctor," 13,021, out of "1st Rose of Sharon," by "Baron," 5,343, and tracing his pedigree back to imported "Rose of Sharon" by "Belvedere." He is a very superior bull, symmetrical, compact, deep-bodied, and so well formed, that he is hard to criticise. The sight of him paid me for the trip. Mr. Storrs' farm is an old family estate, which has been put in beautiful order by the present owner, and by his brother, of whom it was recently purchased. The house and barns have been repaired or rebuilt, fields have been reclaimed, remodeled, and refined, and a great deal of very judicious, telling work has been done.

It is not the large farm alone which has gained by the liberality of these two brothers. The old burial-ground has been enlarged, walled, laid out anew, and called a "cemetery"; the roads have been planted with shade trees, and the church and other institutions have shared in their beneficence.

Reclaiming a Big Swamp.

One of Mr. Storrs' operations is worthy of special notice. There was a swamp about 100 rods long, in which the muck and peat was of indefinite depth, say two to twenty feet. Through this meandered a lively stream, curving here and there among the reeds and sedges, alders and willows. I have never seen a more tough and tangled mass in my life, even in the Southern swamps. The stream is now carried in a straight channel not less than four feet deep and eight feet wide. A part of the way this is substantially walled in on either side with stone. Into this ditch main drains discharge at intervals, and these not only cut off and bring to the ditch, underground, the water of the springs around the edges of the swamp, but all that flows down from the surrounding hills, while that which falls upon the surface of the swamp itself, is carried away by a system of laterals to the same mains. When I was there, the whole swamp was dry, and much of it had been plowed. It required a team of several yokes of powerful oxen to do the work, and I think many of the furrow-slices, 50 feet in length, might have been hauled off the field by attaching a team to one end. Several systems of culture were being attempted, according to the condition of the surface, which in different parts varied greatly. Over a portion of the surface, the matting of roots might be lifted in sheets, (or blankets), 12 or 14 ft. square, revealing a beautiful, soft, mellow, peaty soil underneath, in which corn or cabbages might be planted without even plowing. This surface was being hauled off and burned, and the ashes returned. It was a plucky undertaking—the whole reclamation—not only the "grand canal," but the miles of tile drains laid—and the result will be well worth watching. I have little doubt that the whole outlay will be returned in two seasons' crops after it is all under cultivation.

Wild Onions Flavoring Milk.

The flavorous onion is the unsavory fly in many a "pot of ointment"—not to say pat of butter. We have been fortunate for several years, and fields in which onions abound have been saved for summer pasturage, or made some other use of, but my neighbor F.—as good a farmer and breeder as he is banker and broker—has been going through "afflictions sore," on account of the onions, or leeks. He gets double the market price for his butter, supplying friends and fastidious people, who enjoy their butter as they do their Sauterne, and study its subtile flavors, rolling it as a sweet morsel under their tongues, demanding that it be little salted, and perfect in odor, flavor, and texture. His fields are blue with onions early in April, and they (the onions) are the particular delight of the cows. We were discussing the taste of the cows, and the flavor of the butter the other day, when he favored an opinion he had somewhere seen advocated, namely, that the flavor was nearly lost after a few hours, thus, that the morning's milk would be quite free from the flavor, if the cows were kept shut up in the stable or yard all night. It is certain that there are few odors more diffusive than this one we so depreciate in milk. One may perceive it in the cow's breath. Her very hide reeks of it, and the milk shares it impartially with all the other secretions.

One man may make a good part of his breakfast of an onion or shallot salad, or eat a dozen of the bulbs as we do radishes, and yet by noon no one can perceive the flavor in his breath, while that of another person may be redolent for a day or two. I presume it is so with cows. That is, that one animal will throw off the odor much quicker than another. I used to keep bees in Hartford County, and when the onions were in bloom, the *breath* of the hives would be perceived several rods off. It was the very essence of an onion eater's breath. Yet we never perceived any ill-flavor in the honey, and I believe in onion districts the honey that is gathered from that crop, is considered superior to most mixed honey. May we not gather

A Lesson in Domestic Economy from the Bees?

Honey when it is brought to the hive and stored, is in a very liquid condition. In this state the cells can not be properly filled with it, and the bees would not seal up the cells if filled. They regulate the temperature and ventilation of the hive with the greatest accuracy, maintaining a high temperature, and at the same time keeping a current of air in constant circulation all through among the combs. The result is the excess of water is driven off from the newly gathered honey, which is greatly reduced in bulk, and with it goes the last vestige of the onion flavor.

I have known milk to be scalded as soon as drawn, with a view to drive off this odor, but with only partial success. It would be impossible to evaporate the milk at as low a temperature as the bees make use of, but they can not maintain a high one, because it would melt their wax, which is sometimes done in spite of their most energetic wing-fanning for ventilation. We may easily subject milk to a temperature of 150° Fah., or perhaps considerably higher without changing it, and giving it any boiled flavor, and I have no doubt that this would, in the course of an hour or so, effectually dissipate the flavor of the onions. Our old friend, Gail Borden, of condensed-milk and meat-extract fame, must have made experiments in this general direction. He employed a temperature of about 150°, I believe, in connection with as perfect a vacuum as he could secure by a powerful air-pump; and the air and steam which was thrown out from the discharge pipe of his air-pump, was loaded with a noisome stench of corrupt animal matter, mingled with the odors of the barn-yard. I learn also at the office of the Company in New York, that the flavor of onions is never perceptible in milk condensed on the Borden principle. The indications therefore are obvious, that subjecting milk to a moderately high temperature, and stirring it to promote rapid evaporation, will probably drive off the garlic flavor.

* * *

Talks on Farm Crops.—No. 6.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"We do not see," write Elder Brothers, of Beaver Co., Pa., "why you speak so disrespectfully of the corn crop. It is one of the best crops that is grown in this country—far ahead of oats. Fifty bushels of shelled corn per acre is much better than thirty bushels of oats, and then an acre of fodder is as good feed as an acre of hay. Corn is a rank feeder, and the ground cannot be too rich—no danger of its going down. After the corn, sow barley or wheat. If we could leave oats out altogether, it would suit us. But they seem a necessary evil."

I cannot imagine what I have said that could be considered disrespectful to our grand American cereal, Indian Corn. I have a most sincere and profound admiration for the crop.

"They probably allude," said the Doctor, "to what you said, (May No. of the *American Agriculturist*), as to using artificial manures on corn. You said, if you used them at all, it should be 'on crops which command a relatively higher price than corn.'"

"That is still my opinion," said I, "but possibly it is an erroneous one. We greatly need a series of careful experiments, embracing a whole rotation, say corn, barley, wheat, clover, etc. I am inclined to think it would be found more profitable to apply the artificial manures to the barley, or wheat, than to the corn."

It seems clear to me that, in using artificial manures, we should apply them, (*1st*,) to those crops which require the *most labor* per acre; (*2d*,) to those crops which command the highest relative price.

This question of *price* is too often overlooked, and yet a moment's reflection will show that with wheat at $2 per bushel, an application of 200 lbs. of superphosphate, and 300 lbs. of nitrate of soda per acre, might be very profitable, while at $1 per bushel, it would scarcely pay. And so with Indian corn, it is impossible, from the very nature of things, that artificial manures can ever be cheap enough to make their application profitable to corn in sections where it sells for less than 40c. a bushel.

In such sections, farmers must look to the plant-food lying dormant in the soil, rather than to artificial manures.—"But suppose," said the Doctor, "they have land containing very little available or dormant plant-food."—"In such a case," said I, "they cannot afford to raise corn for 30c. a bushel, unless they can get manure for little or nothing."

Now I cannot see how these remarks can be considered in any way disrespectful to Indian corn. It is the crop of crops for cheap, rich land; and if we at the East are to compete with the West in producing cheap corn, I can see only two ways which promise success: (1.) We must drain our low, rich, alluvial land, and bring it into cultivation. (2.) We must make more manure on the farm. To do this, we may have to buy artificial manures, but if so, I doubt whether it will be found the most profitable to apply them directly to the corn crop.

On my own farm, I am making much more manure than the Deacon, or the Squire. I do it principally by buying bran, malt-sprouts, and other food for stock, and by feeding out all the grass, clover, hay, corn, corn-stalks, straw, oats, and peas, and mangel-wurzel and other roots that are grown on the farm. And now, when we have got the manure, what shall we do with it?

I do not propose to answer this question now, but I think you will find that most farmers who succeed in making their land rich, have a tendency to raise crops which bring a higher price than corn, or they keep improved stock that requires for its most rapid growth, more or less green food the year round. In other words, such farmers will raise mangel-wurzel, cabbages, turnips, rape, etc. They will raise corn, too, and raise large crops of corn, but they will, in connection with it, either before or after, raise other crops which directly or indirectly pay a higher profit.

In fact, before they finish their letter, Messrs. Elder Brothers allude to the very point I have in my mind. They say: "We have no roots this season, as we have been busy building a barn, and it seemed impossible to find time to plant any. You know everything comes in a rush, and we were afraid we would spoil some crop. How to do without roots this winter is a problem to be solved. We want to turn the Cotswold ram to the ewes in August. Can the lambs be raised without roots. The ram is a thorough-bred Cotswold, and got us good lambs last season. We do not feed him, but he keeps in good stock order, and weighs about 180 lbs. Can these heavy sheep be raised on grass alone? *We cannot do it.*"

This is right to the point. These heavy English mutton sheep are not raised in England on grass alone. After they have got their growth, they will *keep* fat on grass. But with sheep, as with other stock, early maturity and rapid growth when young, say 150 lbs. at 12 months old, require, as a rule, either remarkably rich grass or some extra feed in the shape of roots, bran, malt-sprouts or grain.

And we want sheep and cattle that require, and will pay for, rich grass and extra feed. There are money and manure in the business. The English want fat sheep, and we want rich manure. We can afford perhaps to put a heavy dressing of good barnyard manure on to a piece of land for corn. Cultivate the land thoroughly. Plow it in the fall, after the corn is off, and again in the spring, once or twice, and then sow it to mangel-wurzel, and for this crop, in this section, we may be able to use artificial manure to good advantage and decided profit.

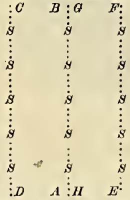
"I thought," said the Doctor, "you were never coming to the point. You think, then, that we cannot afford to use artificial manure for corn; but that we can afford to apply our barnyard manure to this crop, and then follow the corn with mangel-wurzel, which, with the aid of a little artificial manure, will utilize the manure left in the soil."

I do not give this as my settled opinion. We are feeling our way. There are many things to be taken into consideration. As yet, it is the convenience of tillage operations, rather than the dictates of chemistry, that controls our system of rotation.

Last year, after my corn was cut, and while it was standing in stooks on the land, we plowed between the rows of stooks. It is this early fall-plowing, while the ground is dry and hard, that does the most good. The land was rather stiff, and it was so dry and hard that we put 3 horses on the plow.

"But with three horses abreast," said the Squire, "I do not see how you could do much plowing between the rows of stooks."

We can plow just as close to the stooks as with two horses. The rows of corn are 3½ feet apart, and we put five rows into a stook, so that the rows of stooks are 17½ feet apart.



We commense plowing at *A*, turning the furrow towards the row of stooks, and when we get to the top of the field at *B*, turned "haw," and came back from *C* to *D*, turning, of course, the furrow towards the other row of stooks. We proceeded in this way until all the land was plowed between these two rows of stooks. Then commence at *E*, and plow to *F*, and back from *G* to *H*, and so on until the field is finished.

There was a strip, from *A*, *H*, to *B*, *G*, about four or five feet wide, that was not plowed. This was left until the corn was husked, and when husking, the bundles of corn stalks were placed in stooks on the plowed land, and this allowed us to plow the land on which the rows of corn stood. We commenced at *B*, and threw back the previous furrow to *A*, and then from *H* to *G*. In this way all the land was plowed. It makes a great many "dead furrows," but these are useful in carrying off the surface water in winter and spring. The land looks rough, but it lies up high and dry. If there is time, it may be plowed again just before winter sets in.

The only objection to this plan is, that it makes the land uneven, but by careful plowing and cultivating in the spring, it can be made level. And this repeated plowing, and cultivating, and harrowing, and rolling, is precisely what this rather heavy land requires, to prepare it for mangels—or in fact for oats, barley, or any other spring crop.

I am convinced that we shall find it to our interest to work our land more and more in the fall—and the earlier the better. Our springs are short, and we are in a hurry to get in the seed; the land is wet, and if plowed in this condition, we do more harm than good. If we wait until it gets dry, it is apt to turn up lumpy, and much harrowing, cultivating, and rolling is required, to get it in anything like good condition. And as everything is crowding us, we are often obliged to put in the crop with some of the land so hard that, unless we have an unusually wet spring, the seed is a long time in coming up, and the crops are "spotty."

And it is these poor spots which pull down the "average yield" to such a low figure. I have in my own barley field to-day portions that will probably give 50 bushels per acre, and spots, where the yield will not be 10 bushels. And yet these latter spots are naturally the strongest and richest land in the field. If in the right mechanical condition, they would yield a heavier crop than the lighter and more easily worked parts of the field.

This work must be done in the fall. I do not say it *cannot* be done in the spring, but it is safe to say that in nine cases out of ten it will not be done.

After we are through sowing wheat, say the middle of September, we can from that time until winter sets in, very profitably employ our teams in getting the land ready for spring crops.

"But we are very busy," remarked the Deacon, "cutting corn and digging potatoes."

True, but it is better to hire an extra man than to let the team lie idle. Get a three-horse plow with a good point, and recollect that you are doing the work principally for the sake of breaking up and pulverizing the hard spots. You want a faithful man, who will take pains to do good work, especially where it is most needed. There is a great deal of poor plowing done on our farms.

Last fall I plowed my potato land, and this spring harrowed it and drilled in barley. It was not plowed in the spring, except a strip of rather heavy land, running diagonally across the lot. This was plowed. In drilling, the drill crossed this plowed strip, and there was unplowed land on each side of it. I noticed that the seed did not come up as soon on the plowed strip, as on the unplowed land on each side. And the barley on the unplowed land was decidedly of a darker color. This was not owing to the difference in the character of the land, for some of the unplowed land was just as hard and stiff as the portion that was plowed, and some that was plowed was as light as the land adjoining. I am fully satisfied that the difference was due to the fact, that in plowing we turned up soil that was much colder than the unplowed surface soil that was merely harrowed. The latter had been exposed to the sun, and was warm enough to give the barley a good start.

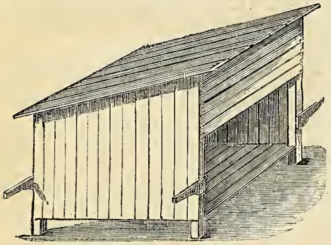


Fig. 1.—A PORTABLE PIG PEN.

Now, instead of plowing this strip of hard land once in the fall and once in the spring, it ought to be plowed twice in the fall. And the work should have been done while the land was dry and hard. Plow as soon as the crop is off, and harrow and roll until the hard and lumpy spots are reduced to the finest condition. This is the important point. It may not be necessary to harrow, roll, and cultivate the whole field, but do not leave it until the whole surface is worked as fine as if you were going to sow it. Then, before winter sets in, and if possible while the land is still quite dry, plow under this fine, mellow surface soil. This will bring up the hard, lumpy soil underneath to the surface, and I would leave it rough for the winter. In the spring these clods will dry out quickly, and a good harrow will reduce them to powder. A cultivator following, will mix this fine, dry, warm soil with the colder and damper soil underneath, and soon give you a warm, mellow seed-bed.

A Portable Pig Pen.

Where a single family pig is kept, provision for changing the locality of its pen is often necessary, so that the pig may be kept wherever it is most convenient. It may be placed in the garden, at the time when there are waste vegetables to be disposed of, or it may be penned in a grass lot. A portable pen, with an open yard attached, that will be found useful for a pig or a few chickens, is shown in the accompanying illustrations. At fig. 1 is the pen, the engraving showing it so clearly that no description is needed. At fig. 2 is shown the yard which is placed with the open space next to the door of the pen, so that the pig can go in and out freely. The yard is attached to the pen by hooks and staples, and both of them are provided with handles, by which they can be lifted and carried from place to place. Both the yard and pen should be floored, and the floors should be raised a few inches from the ground, that they may be kept dry and made durable.

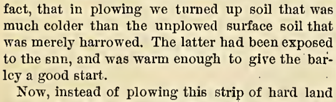


Fig. 2.—YARD TO PORTABLE PEN.

The Narragansett Turkey.

The popular bird known as the Narragansett Turkey, originated on the shores of the bay of that name some years ago, and is very largely raised in Rhode Island and Eastern Connecticut. It is a large gray variety, with lighter or darker shades, according to the fancy of the breeder. The most striking and uniform feature about the markings of the feathers, is a white patch upon the wing bow. Not much pains has been taken to breed them to a feather, as the chief thing looked after is size. There is probably no other section, in this country at least, where turkey raising receives so much attention among farmers, and where the average weight of flocks runs so high as in the above named localities. The soil and climate are admirable, no disease prevails, and the turkey crop is about as sure as anything grown upon the farm. This breed is the result of careful attention to the selection of parent birds, and good breeding, continued through many years. The earliest and best formed birds are selected for breeding every year. The practice of breeding from two and three-year-old hens, is gaining in favor with the more intelligent farmers, though it is still the exception. Great importance is attached to the selection of the male bird. He must be perfectly formed, with a straight breast-bone, rather coarse, stout legs, and a proud carriage. A young cockerel, weighing twenty-six to twenty-eight pounds at the beginning of the breeding season, is the model bird to lead the flock. The young hens should weigh thirteen to fifteen pounds. It is not uncommon for farmers in this region to get three or four hundred dollars for their turkeys sold at Thanksgiving and Christmas. If one is going into turkey-raising, it will pay to get eggs or birds from a stock that has been bred for a score of years or more, for their size. The Narragansetts are a well-tested breed, and are hard to beat.

In starting a flock, we have invariably had the best success with birds. It takes a little more capital to start the enterprise, but a year in time, and advantage of seeing the stock, and knowing what sort of birds are likely to be raised, are gained. We have now conscientious poultry breeders, who have given years to the study of their business, and when we buy their birds we reap the advantages of their long experience. CONNECTICUT.

Home-Made Corn-Sheller.

A Canadian correspondent sends a sketch and description of a home-made Corn-Sheller, which may answer a very good purpose where there is leisure to make it, and means of purchasing any of the manufactured shellers are wanting. As a general rule, we do not think it wise for a farmer to spend the time necessary to make a poor, inefficient substitute, for a cheap, substantial implement or machine, when that time can be put to more profitable use. If there is an acre of waste land about the farm, or a swamp to be drained, weeds to be rooted out, stone to be picked off, or any other work to be done that will add to the productive capacity of the land, these should be done first, and if there is time to be spared, then other things may not be left undone. During the winter season, or in wet weather, it may pay very well to fix up such useful contrivances as are frequently described or suggested in the *American Agriculturist*, but we know of a case where a farmer who spent a day in making a splint broom, on the same day lost a calf which fell and was smothered in a sink hole which one hour's work would have closed. For a 25 cent broom a calf worth several dollars was thus thrown away. "Everything in its place and season," is the rule to be observed as regards all such things.

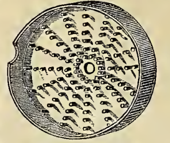


Fig. 1.—SIDE-PIECE.

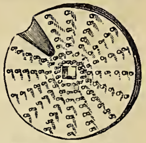


Fig. 2.—SIDE-PIECE.

The corn-sheller referred to is described as follows. A circular piece of plank, (figure 1), 2 inches thick, is studded with wrought nails, driven so as to leave three-quarters of an inch projecting upon the face, and the points are clinched upon the reverse side. At figure 2, is a similar piece of plank, furnished in like manner with projecting nails. The first piece of plank has a round hole in the center which fits the end of the crank, figure 3; the other piece has a square hole, which fits the square portion of the crank; so that when the crank is turned, one piece of plank only revolves, the other is held stationary by being fastened to the frame. The two discs are fitted into a rim, made from part of a cheese-box, one being nailed to it and one being loose. A hole is made in the rim to receive the corn ears, and as they are shelled, the shelled corn and cobs fall out of an opening in the bottom of the rim. The whole is fitted in a frame (fig. 4) similar to that of a grindstone.

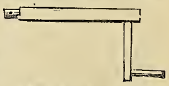


Fig. 3.—HANDLE.

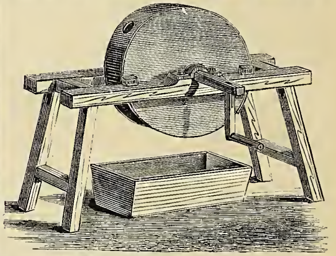


Fig. 4.—CORN-SHELLER COMPLETE.

How to Mix Cement.

In the *American Agriculturist* for Dec., 1874, we gave some directions, with several illustrations, for building in concrete. Since then we have had frequent inquiries in regard to various details, especially as to the proper method of mixing the concrete. As this is a very important part of the business, we now give some directions both as regards mixing concrete, and the cement alone. The article to be used is the Rosendale cement, which is manufactured at Kingston, on the Hudson, N. Y. This is nearly as good as the imported Portland cement, and much cheaper. The cement is made from what is known as hydraulic lime-stone, that is, a rock which contains, besides ordinary lime-stone, some clay, silica, and magnesia. Pure lime-stone contains only lime and carbonic acid, in the proportions of 56 parts of the former to 44 of the latter in 100; when this stone is burned, the carbonic acid is driven off by the heat, and pure or quick-lime is left. When this is brought in contact with water, the two combine, forming hydrate of lime; during the combination, heat is given out; the operation is called slaking. When the water is just sufficient to form the combination, a fine, dry powder is produced, which we call dry slaked lime. When the water is in excess, the surplus is mixed mechanically with the lime, and forms what is called the milk of lime, or cream of lime, according to its consistence; it is this pasty substance which we mix with sand, to form building mortar. But when we have clay mixed in a certain proportion, either naturally or artificially, with the lime-stone, and this stone or mixture is burned in the same manner as ordinary lime-stone, we get what is known as hydraulic lime, because it combines with a much larger proportion of water than pure lime, and in combining with it, instead of falling to powder, like ordinary lime, it hardens into stone again. This hardening takes place even under water; the hydraulic lime combines with just so much water as is required to "set" or harden, and leaves the remainder. It possesses this property, also, when mixed with sand in proper proportions, and when so mixed, the cement will adhere very firmly to the surface of any stone to which it may be applied. This property is made available in constructing works of concrete, which consists of broken stone mixed with such a quantity of cement, that, when it is packed closely, the surfaces of all the pieces of stone are brought into contact with the cement, and the spaces between the fragments of stone are filled with it. That there may be no more cement used than is actually needed, the mixture is rammed down solidly, until the fragments of stone are brought into close contact with each other. The composition of the impure or hydraulic lime-stone, which behaves in this useful manner, is, in the case of some of the Kingston stone mentioned, as follows: Carbonic acid, 34.20 per cent; lime, 25.50; magnesia, 12.35; silica, 15.37; alumina (clay), 9.13; and peroxyd of iron (which is useless or worse), 2.25. On account of this difference in character between lime and cement, a different treatment is necessary for each, and each is put to different uses. The cement makes a much harder and more solid combination with sand, and is therefore chosen when great strength is required. Its rapid setting, when mixed with water, also requires that it be used as soon as it is mixed, and renders a rapid mixture necessary. The cement and sand should, therefore, be mixed together dry, and very thoroughly. Four parts of sand to one part of cement are the proportions generally used. These may be mingled in a box of suitable character, and the mass is so spread as to have a hollow in the center, into which water is poured. The sides of the heap are gradually worked into the water, with a common hoe, in such a way as to prevent the water from spreading about, and as it is absorbed, more water is poured in, until the whole is brought to a thin semi-liquid condition. A box, very suitable for this operation, is shown at figure 1. This is made of pieces of plank, prepared as follows: The side pieces are shown at figure 2; the end pieces at figure 3, and the bottom piece at figure 4. The end pieces are made with tenons, which fit in mortices in the side pieces, as shown in the engraving, and the frame thus made is held together by keys driven into the holes seen in the tenons. The bottom planks are fastened together with cleats, so placed as to receive the frame and fit snugly. Iron bolts are put through holes in the cleats, as shown in figure 4, and through the holes in figure 2, and by means of nuts with washers under them, the whole box is brought firmly together. Such a box, after having been used for this purpose, will be found very useful for mixing feed in the barn, or for many other purposes, and may, therefore, be well made at the first. When the mortar is mixed, the broken stone may be thrown into it, beginning at one side, and the whole is worked up thoroughly with the hoe, so that every piece of stone is coated with the cement. A machine, that is easily made, may be used for this mixing, and is also very useful for mixing ordinary mortar for building or plastering. It is shown at figure 5. It consists of a box set upon feet, with a smaller box attached at the rear end, having an opening at the bottom where the mortar is seen escaping, and a shaft, having broad, flat arms on it, placed at a somewhat acute angle with the line of the shaft, so that they will operate as a screw to force the mass along the spout and out of it at the opening. A crank handle is fitted to this shaft, and if a fly-wheel can be borrowed from a feed-cutter, or a corn-sheller, and attached to the shaft as shown, so much the better. The materials to be mixed are thrown into the box, and by turning the handle, the whole will be thoroughly incorporated with great rapidity and ease.

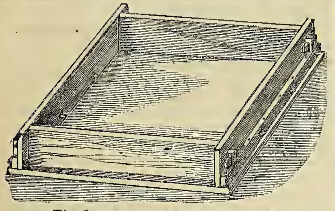


Fig. 1.—BOX FOR MIXING CEMENT.

Fig. 2.—SIDE OF CEMENT BOX.

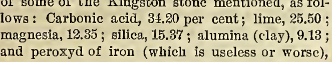


Fig. 3.—END OF CEMENT BOX.

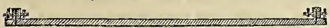


Fig. 4.—MANNER OF FASTENING BOX.

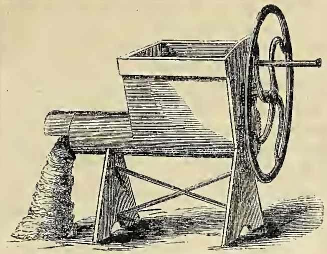


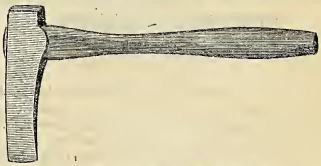
Fig. 5.—MACHINE FOR MIXING CEMENT.

How to Use Sea-Weed.

Complaints are frequently made by those farmers along the coast, who are just beginning to use sea-weed, that it will not rot. This is probably true of dry eel-grass as it is sometimes used. We have known it to be sometimes plowed into a rather dry, sandy soil, and remain for a year without much change. But even this dry sea-weed can be utilized and made to help the manure heap in several ways. In the absence of straw or sawdust, it makes a fair bedding for the stables and sty. We have used it constantly for the last five years in the horse stable, and where rye straw is worth fifteen dollars a ton, and sea-weed can be had for the carting or scowing, it is good economy to make bedding of sea-weed. It takes more of it than of straw to keep the horses clean, but it serves the same purpose, and the larger addition to the manure heap is an advantage. It becomes saturated with urine and manure, and is reduced very fine in the fermentation of the manure heap. It is worked up quite as effectually in the pig sty. A very large and profitable addition may be made to the compost heap by either of these processes, when there are good facilities for gathering the dry eel-grass. But most shore farmers prefer to gather this and other sea-weeds in the green or wet state, in a mixed mass, as they are thrown up by the storms and tides upon the shores. In many localities the coves and tidal streams are raked, and the gathered weed and mud is scowed to some convenient landing-place, and then carted to the farm, sometimes to a distance of six or eight miles. It goes into the barn-yard or sties, and is mixed with other manures, and readily ferments. Sometimes this material, gathered in the summer and fall, is carted directly to the field where it is to be used, and is composted with headlands or peat. The sea wrack, gathered later, and made up principally of kelp, rock-weed, and the finer algæ, is often spread directly upon the land as a top-dressing, or to be plowed in. These weeds are rich in nitrogen, decay rapidly, and make excellent manure. Capital and labor spent in gathering this harvest of the sea, are well invested. CONNECTICUT.

A Fence-Post Axe.

We give herewith an illustration of an axe made expressly for cutting holes in fence posts for receiving the ends of rails in making post and rail fence. The blade is of exactly the same width as the hole to be cut in the post, so that the hole is cut very easily, and if used with sufficient skill, it is made so smooth that it needs no trimming. These axes are made by some of the manufacturers, but where they are not kept for sale, they are very easily made by a blacksmith from a piece of tire iron doubled, and into which a steel blade can be welded.


AXE FOR CUTTING HOLES IN POSTS.

Draining Cellar Walls—Prevention of Dampness in Cellars.

Wet cellars are very disagreeable and unhealthful, and unfortunately far from uncommon. They are frequently caused by permitting the drip from the eaves to fall upon the ground, where, for want of a gutter to carry it away, or other sufficient drainage, the water saturates the ground, and soaks through the cellar wall. But, from whatever cause the dampness occurs, it should be removed as completely as possible. A house should never be built upon a site from which there can be no drainage, and if this precaution has been observed, the cellar may be made perfectly dry by using either of the methods here illustrated. At fig. 1 is shown a method in which a drain is made beneath a brick wall, and the space next to the wall, upon the outside, is filled with small stones. The earth is then not in contact with the wall, and all moisture falls directly downwards through the layer of stones, and reaches the drain under the wall. It will be noticed that the stone outside is carried lower than the cellar floor, the wall is therefore always dry. At fig. 2 a different method is shown. Here is a stone wall with a broad foundation beneath it. This is so made that a passage-way is left in the stone for any water that may be in the soil. This

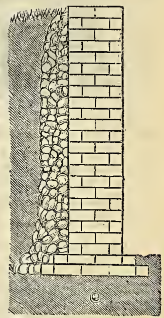


Fig. 1.—CELLAR WALL.

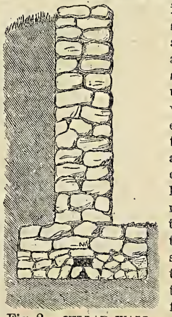


Fig. 2.—CELLAR WALL.

water-way must be made completely around the wall, and in either case, the water that may gather beneath the wall, should be carried off through a drain made expressly for it. Without this outlet, it is useless to make drains beneath the cellar, for if the water is not quickly carried away, it will rise in the soil outside, and inside the cellar through the floor, as badly as before.

A Method of Blasting Logs.

To break up very knotty logs, that are difficult to split, the easiest method is by blasting. This might be more readily done, in many cases, if some substitute were provided for the tamping needed to confine the powder. Where sand, pounded stone, or other material for tamping, is scarce, an iron screw may be used as a substitute. A screw of the proper kind is shown at figure 1. This is made 1⅛ inch in diameter, so as to fit tightly in a 1¼-inch hole, and is provided with a square head, by which it may be turned with a wrench of any kind. A hole is drilled through the screw to hold the fuse. The manner of using it is shown at figure 2. A hole is bored to reach the center of the log, and the charge is placed there as usual, the space above the powder is partly filled with sand, and the screw is turned down tightly upon it; the fuse of course having been adjusted. To prevent the screw from being thrown away by the explosion and lost, it will be necessary to roll the log over so that the screw will be thrown against the ground, or to place some pieces of timber upon it. Care must be taken to do either of these in such a manner as will not prevent the fuse from burning.

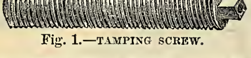


Fig. 1.—TAMPING SCREW.

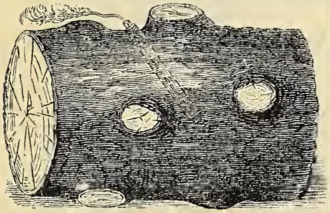


Fig. 2.—METHOD OF BLASTING.

The American Silk Manufacture.

In 1860 the production of silk in America was valued at two million dollars. In 1876 the value of the silk made in this country was not less than twenty-five million dollars. No branch of manufacturing industry has advanced more rapidly than this, and none promises to grow more steadily in the future. But it is worthy of note that the raw material for this manufacture is wholly imported, or the exception is so trifling that it need not be taken into account. At the same time, no country in the world possesses a finer climate and soil for the rearing of the silk worm, and the cultivation of the trees upon the leaves of which it feeds.

Unfortunately, the light, easy, agreeable industry of breeding and rearing the worms and reeling the fibre from the cocoons, is not considered as being worthy the notice of farmers, or farmers' families. Yet the day of small things has not wholly passed away, and indications seem to point to a necessary return to the smaller industries of the family, which have been abandoned or neglected during the flourishing times of the past few years. Everything is tending towards the exercise of economy in small as well as great things, and an industry which may profitably employ the children on the farm, is not to be overlooked or despised. The exhibition of silkworms and their cocoons at the Centennial, did much to inform the public as to the character of this employment. The exhibit of Mr. Crozier, of Silkville, Kansas, was very interesting in this way, and it is to be hoped may be effective in turning the attention of farmers' wives who have more than usual leisure, to the advantage of learning the methods of managing the worms and of teaching their daughters. The reeling of the silk is somewhat difficult, but the machine needed for it is very simple, and can be worked by a little girl.

Several million dollars a year might be distributed amongst farmers' families, that are now sent abroad for the purchase of raw silk, if only the attention of those who are able to do this easy work were effectively turned to it. In California, the raising of silkworms' eggs is an important industry, but in this the silk is sacrificed, or at most, the cocoons from which the moth or parent insect has escaped, have a very low value for carding purposes.

* * *

Seed-Grain will stand any amount of Cold.—At a late meeting of the Linnean Society of London, a pot of growing wheat was exhibited which was raised from some of the grain left at Polaris Bay, 81° 33′ N. lat., by the American polar expedition, in 1872, exposed to all the intense cold of that region. A sample of this grain was sown at Kew Gardens, and about two-thirds of the grains germinated. So did two peas, and a grain of Indian corn.

The Economy of Agricultural Machinery.

It is plainly evident that to make the business of farming profitable, at the present time, it must be carried on by the help of all possible economical aids. No farmer can afford to cut hay with the scythe, or grain with the cradle, now-a-days. It costs too much, and the farmer whose produce costs more than that of his neighbor, can not afford to sell so cheaply. But as a rule, the market price of any thing is, what is costs to produce it and get it to market. Accidental circumstances may tend to advance or depress the price temporarily, but it gradually finds it level again, by force of a rule which is always at work, and is of universal application. The cost of a thing is its average cost; there can not be two prices, one high and one low, at the same time, so that the average price is fixed between the two extremes of highest and lowest cost. Therefore, he who produces any thing at the least cost, makes an extra profit; he who produces at a mean cost, makes a fair profit, and the one whose product costs the highest, fails to secure any profit, but may gain a loss instead. Now the actual cost of a thing is measured by the labor required to produce it. If a day's labor is worth $2.50, and four days' labor are required to produce a ton of hay, by the help of the best labor-saving implements, and eight days are required to produce it without the aid of these, the probable selling price will be $15 per ton. One man will be paid $3.75 per day, at this price, and another will only receive $1.87½; and if the latter hires any labor, he will not get his money back. This illustration is of as wide application to agricultural industry as to all others. To apply it to the making of hay, for instance, we may see how much profit may be gained from the investment of a certain sum of money in haying machinery. A full set, including mower, tedder, rake, loader, and hay-fork, and carrier, may cost about $350. With care, these may be made to last 20 years, in which time a yearly allowance of 10 per cent will pay for them, and also the interest on the cost with necessary repairs. The charge will therefore be $35 a year for the use of all this machinery. If there are only 10 acres of land in hay, to be mowed each year, the charge per acre will be $3.50. This must be saved out of the sum that would otherwise be necessarily expended for hand-labor. A probable estimate, founded upon what we have been able to do, or have seen done with machinery, and what we have had done by hand-labor, may be made as here given, viz: The cost of making 5 acres of hay by machinery, will be about equal to the labor of two men for one day and a half, costing, at $1.50 a day, $4.50. This may seem a very low estimate, but when we can cut one acre of good grass per hour, with such a mower as the Champion Haymaker, or the Buckeye, and by the use of a tedder, horse-rake, and hay-fork, have some of the 5 acres of hay safe in the barn before night, and the remainder all in before noon the next day, the estimate is a reasonable one. It is supposed that the weather is all that can be wished, and with everything in favor of quick work, it will be more than we have found four average laborers will do, to have 5 acres of grass down in one day when using scythes. The turning, curing, and raking, may easily occupy these men two days, and one day more will be occupied in loading and unloading it into the barn. The cost will be then $24.00. The difference is $19.50, or more than the $3.50 per acre. But with a set of haying machinery, 50 acres can be harvested with ease in the time required by four men without it. In this case, the cost per acre is very much less, and just here it might be pointed out, how great an advantage the owner of a large farm enjoys, through the help of machinery, over the occupant of a smaller one. It used to be the other way, and a small, compact farm could be rather more profitably managed than a large one. But while this is true yet, there is a certain benefit accruing to even so small a farm as that which has but 10 acres of grass to cut yearly.

This is but one instance among many which might be pointed out. In the cutting of fodder, the cost of a good fodder-cutter may be saved in the more economical feeding of a single cow or horse; for thrashing, we have found it profitable to own a horse tread-power and thrashing machine for a 90-acre farm, and so on through the whole list of implements and machinery. The time has come when, in the close and unavoidable competion, not only of farmers with farmers, but of agriculture with other industries, it is absolutely necessary that every help should be secured that can cheapen the product, else a man will labor against so many difficulties, that he will either be overworked, or will become embarrassed for want of sufficient remuneration. Hand labor cannot compete with horse labor, nor horse labor with steam. The unaided hand cannot compete with the united brains of inventors and mechanics, nor can the man who has no capital to assist him, succeed in competition with his neighbor, who is able to thoroughly stock and furnish his farm. It cannot be denied, that in some cases farming does not pay; this is not the fault of farming, but of the manner in which the industry is managed. It is true, and "pity 'tis, 'tis true," that this fact has a very uncomfortable inference for some farmers, but we see no help for that but in their keeping up with the times.

Insurance of Farm Buildings.

No farmer can afford to have his homestead or buildings uninsured. To have them burned by accident would be ruinous to him, and a conflagration, which may occur at any moment, might involve the loss of buildings, tools, implements, live stock, and crops. No farmer can afford to run this risk while safe insurance is to be had so cheaply. But unless the insurance is procured in a perfectly safe and honorable company, the policy is hardly to be held as any security. In choosing a company in which to insure, it would be wise to select one which does an extensive business throughout the country, and thus lessens the risk of loss, averaging, as it were, its risks. Those insured are always more watchful and careful of danger. The wise precautions enforced by the insurance company, beget a habit of precaution and carefulness on the part of the insured, particularly when it is known that a want of care, and the reckless use of lights and fire, will vitiate a policy. Then dangerous and explosive oils will be avoided, and only those that are known to be perfectly safe to use, will be burned. There will be no smoking in the barn, nor matches left loosely on the girts or sills. It is a peculiarity of mankind that they will more readily obey any regulations made for them, than follow their own knowledge of what ought to be done. Men would rather be governed than govern themselves, and very readily submit to reasonable control. Thus it is always found that greater neatness, carefulness, and caution are found about farm buildings when they are insured. No careful business man will run the risk of losing his property by fire, and every farmer should be a business man.

Scabby Legs in Poultry.

The unsightly disease which affects the legs of fowls, causing them to swell and become distorted, is due to a mite, a small insect which is similar in appearance to that which causes scab in sheep. It is roundish-oval, and semi-transparent, about one eight-hundredth of an inch in length, appearing, when magnified 400 diameters, about half an inch long. If the scales from the leg of a diseased fowl are beneath the microscope, a number of these mites may be found between them. Beneath the scales there are spongy, scabby growths, in which the eggs and pupæ of the mites are to be seen in great numbers. The pupæ are very similar in shape to the mature mites, but are very much smaller, appearing, when viewed with the above mentioned power, about one-tenth of an inch in length. The disease being of a similar character to the scab in sheep, or the mange in dogs and cattle, and it may be cured by the same treatment. We have cured fowls of the disease, before accurately knowing the cause, by applying to the legs a mixture of lard with one-twentieth part of carbolic acid. This should be applied with a stiff brush, such as one of those sold with bottles of mucilage. A very small painter's "sash tool" would answer the purpose, but something must be used by which the medicated grease can be applied thoroughly to the crevices between the scales. A mixture of equal parts of lard, or sweet-oil, and kerosene, will be equally as effective as the carbolic acid mixture. It is probable that lard or oil alone would be effective, but the kerosene more easily penetrates between the scales, and the carbolic acid is sure death to the parasites. The remedy being so simple, it will be inexcusable if this disagreeable affection is suffered to remain in a flock; while, however, one fowl is troubled with it, it will certainly spread, as the mites will burrow beneath the scales of the other fowls. If precautions were generally used, the parasite could soon be exterminated. It should be made a disqualification at poultry shows, for fowls to be affected with scabby legs or feet, in any degree whatever, for we know that several poultry yards are not free from this disease, and whenever affected fowls are sent out, the disease goes with them.

A New Commissioner of Agriculture.

It is announced that Gen. William G. Leduc, of Minn. has been appointed to succeed the venerable Watts as the head of the Department of Agriculture. Some of the political papers are already casting slurs upon this gentleman, whose chief fault seems to be, that he is unknown to them and to the public generally. We are not aware that the late incumbent was known outside of his own county, until the former President placed him in a prominent position. Our present satisfaction in the matter, is in the fact that neither of several eminently unfit candidates, who tried very hard to get the office, succeeded. It is certainly unfair to pre-judge the new Commissioner; so far as the *American Agriculturist* is concerned, we welcome him to the office with our best wishes for a successful career, and he shall have our hearty support until he proves himself unworthy of it. One paper finds fault with the appointment because the Commissioner has not heretofore been prominently identified with agriculture. He certainly cannot know less about it than some who were put forward for the position. Indeed, if a profound knowledge of agriculture were a crime, and either of the former commissioners had been put on trial for it, any intelligent jury would have rendered a verdict of "not guilty." What is wanted for the place is a man of general intelligence, broad views, and marked executive ability. Our great War Secretary was not a soldier, and the Navy Department has been well managed by men who knew nothing about the sea. If the present Commissioner is not a practical agriculturist, and knowing his own deficiencies, will surround himself with proper advisers and subordinates, he may better serve the agriculture of the country than one who, having had experience on a small farm, thinks he has nothing to learn. These small men measure everything in their little pint pot of experience, and all their idea of science, is a knowledge of the "signs of the Zodiac." If we have now a man whose vision is wide enough to take in the whole country, and the relations of agriculture to the national welfare, we shall have reason to rejoice. Let us wait and see.

More About Cutworms.—Climbers.

[It was not practicable to give all that our correspondent at "The Pines" has to say about cutworms with the rest of his article on page 302, and in view of the fact that there have been numerous inquiries concerning these insects, which this answers, we give the remainder here.—Ed.]

Not many years ago there was a lively discussion in the agricultural papers on the question

Can the Cut-worm Climb?

The Cut-worm was accused of injury to trees, by those who declared that they had by lantern light caught *it* at work. On the other hand, others as strongly asserted that it was impossible for *the* cutworm to climb, as *it* always worked just on the surface, and took off the plants nearly level with the soil. Both sides were right, but they, as well as the majority of the people at the present time, were in error in supposing that a cut-worm was a cutworm, and that there was but one, the country over, while in fact there are a dozen, and I don't know but more, in different parts of the country, all the caterpillars, or larvæ, of Owlet, or night-flying moths, of four different genera. The worms that make the havoc with cabbages and other crops at the East, are two or three species of *Agrotis*. For some reason they have been especially abundant this year, and attack almost any green thing that is not too large. They have not only made havoc in the vegetable garden, but they, probably actuated by a desire to know if it is as valuable for caterpillars as for cows, have paid special attention to my trial piece of Prickly Comfrey, which for a while seemed to go backward. Then in the flower beds, they have also left vacancies, and where there are only one or two plants of a kind that we specially value, they select those in preference. The climbing cutworms, of which there are three or four, have been especially destructive in some of the Western States; they ascend the trees at night, and in a short time will strip them of every bud. They take the fruit-buds first, and then the wood-buds, preferring this to any other kind of food. They have several natural enemies, but there does not yet appear to be any wholesale way of killing or trapping them, and the slow process of digging them out of their holes, which are easily found, is still the most effective. Artificial holes, made by means of a sort of dibble that will make several at once, such as was figured a year or two ago, have been used to entrap them, and they may be crushed in the holes by thrusting in the same dibble. A guard, such as I have mentioned for tomatoes, may be used in many cases. For the climbers a guard of tin may be placed around the trees; jarring the trees an hour or two after midnight will bring them all down, but the better way is to keep them from going up. Should this abundance of cut-worms continue, they will be a pest of sufficient magnitude to warrant, if not a Commission by Congress, at least by the State Legislatures to investigate them.

* * *

The Potato-Bug in Germany.—It is reported in the daily papers that the Colorado potato beetle has appeared in a field in Germany, and that the government officials caused the field to be covered with tan saturated with petroleum, which was set on fire. Of course the proprietor is paid for his crop, thus sacrificed for the public good. It is one of the benefits of a strong government, that such measures are possible.

The Echo Farm Dairy.

The herd of pure-bred Jerseys, which are described on page 293, is kept by the owner, F. R. Starr, of Litchfield, Conn., for the purpose of a "gilt-edge" butter dairy, as well as for breeding purposes. Mr. Starr's arrangements for his dairy are every thing that can be implied in the term "gilt edge." Although the dairy building is a temporary affair, not very well adapted as to room and interior arrangement for the purpose to which it is applied, nevertheless, in every thing but space and roominess, it is all that can be desired. There is the perfection of neatness, order, and cleanliness, and evidence on every hand of skillful management. The milk is set in deep pans of the ordinary size, 20 inches deep, and 8 inches in diameter, in a pool of cold spring water. The cream, before being churned, is forced through a strainer, by which it is freed from all lumps, or such undesirable accidental accessories, as are too common in many tolerably well managed dairies. As it is a matter which relates to cleanliness, it might here be mentioned that a very convenient wash-room, with every facility for securing perfect cleanliness of person and clothing, is provided in the stable for the milkers, and the use of the room is enjoined upon every person employed about the cows. Quiet demeanor and the kindest treatment of the animals is also the rule here, and it is hardly necessary to say that this is enforced, for no men we have seen anywhere could surpass those employed by Mr. Starr in the kindness they display for the beautiful animals under their charge. "It goes without saying," that this feeling is evidently reciprocated by the animals. The strainer, which is made by Parker & Worthington, of Westchester, Pa., is so constructed that, by the oscillation of the arm at the top, the cream is forced by plungers through fine gauze, by which it is brought into perfect condition for churning. The churn used is the well-known Blanchard, of the largest size, with a capacity of 150 pounds of butter, and is operated by a horse-tread power. The butter is worked by the rotary butter-worker, made by Speakman, Miles & Co., Westchester, Pa., shown at figure 1. This butter-worker is on the same principle as that which received the first premium at the recent dairy exhibition at Hamburg, and is very effective and successful in operation. The butter is made up in round prints, and is packed for shipment to the purchasers, in boxes of home manufacture, but of very excellent design and construction. For the purpose of maintaining a low temperature during transit, the ice-chamber is placed in the center of the box, and is large, while the box itself is small. The size shown at figure 2, (see next page,) holds only 10 pounds. This box is 14 inches long, 12 inches wide, and 10 deep; and the butter is placed upon loose trays (shown at figure 3), which have openings in the center, through which the ice chamber passes. The trays are an inch smaller each way than the inside of the box, so that there is an air space all around them, which keeps the butter cool. The box, when filled, is fastened by a staple and padlock, and an iron handle is fixed on the lid, by which it may be lifted. Larger boxes, (shown at figure 4), holding about 40 pounds, are also used.

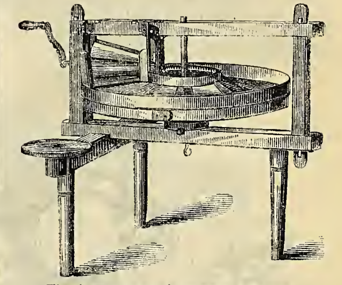


Fig. 1.—SPEAKMAN'S BUTTER-WORKER.

These are make upon the same plan, are 30 inches long, 18 inches wide, and 14 inches deep. Instead of trays, plain shelves are used for the butter to rest upon. No coloring, whatever, is used in this dairy, and the butter is of a true, and not a fictitious, Jersey color. It is pertinent here to remark that, while Mr. Starr's arrangements are very excellent, yet they are in no way costly. So far as expenditure is concerned, the dairy-room and dairy implements could be had upon every dairy farm. Cleanliness is not costly, any more than virtue and honesty are; it is only the effort to acquire and practice these, which costs; and the cost is simply determination and some trouble. To imitate the practice of the Echo Farm Dairy, and to produce butter of similar character, is possible for every dairyman, and in describing this dairy, we wish emphatically to note this point, that what is done here may be done anywhere, if the determination is made, and the skill is acquired. For instance, we recently inspected some well-flavored butter that was grossly adulterated with hairs. This is inexcusable, but it is a very prevalent fault in much of the butter which comes to market. Under the arrangements at Echo Farm Dairy, such an occurrence is impossible. The systematic care, by which the admission of impurities into the milk is entirely prevented, need not cost one dollar a year in money. The expense of the necessary strainers, is the only outlay, and the time taken to use them is the only added expense. It is the same with all the other arrangements about the dairy. It is an encouragement for those who will practice these dairy virtues, that these will be their own reward, in bringing a better price for the product; for, unfortunately, notwithstanding all the efforts and examples that may be put forth for the reform of the dairy, it is only here and there that a genuine convert from the too common practices can be made, and it is very certain that choice butter will always readily sell at very profitable prices, and never exceed, if it reaches the demand. There is a plenty of room in the markets for dairy goods of the highest class.

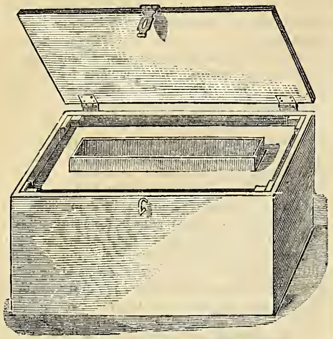


Fig. 2.—BOX FOR 10 POUNDS OF BUTTER.

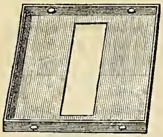


Fig. 3.—TRAY.

Fashions in Bouquets—The Fan.

To those who have a real love for flowers, the idea that they come under the rule of fickle fashion, will seem improbable if not repulsive. Yet many a florist knows to his cost that fashion, in cities at least, rules as rigidly in bouquets as it does in bonnets. Many a grower has, at much trouble and expense, provided a stock of camellias, only to find, just as his plants are coming on finely, that camellias were out of and roses were in demand, or that had his frames, or houses, been filled with Lily of the Valley instead of violets, he would have hit the fashion of the winter. Not only do fashions in flowers vary, but the form and finish of the bouquet differs. A New York bouquet is strikingly different in its style from one made in Boston, while that in Philadelphia will differ from both. Sometimes the border is of paper cut to represent lace, sometimes it is of satin, again of swan's-down, and of various other materials as fashion may dictate. Not only in the more pretentious hand-bouquets, but in the little clusters for the button-hole, does fashion declare that this or that flower is the thing that one must wear to be in style. Especially in London is great attention given to the matter of button-hole bouquets, which are there considered essential to a gentleman in full dress, and numerous designs for making these, giving the desirable combinations of flowers and green, are frequently presented in their horticultural journals. Just now the London sensation in the way of bouquets, are those made in the shape of a fan. If we mistake not, bouquets of the fan style have been made by our florists, at any rate the idea appears to have struck the Londoners as a new revelation, and a contributor in a recent "Gardener's Chronicle," fairly "spreads himself" on the subject, and writes a great deal without telling much. We borrow the engraving to show the style of the bouquet, fig. 1 giving the front, and fig. 2 the reverse side. Though an enumeration of all the flowers and sprigs is given, we are not told how the bouquet is made, but it would be very easy to make a frame work of broom-corn splints, or something stiffer, for the foundation. In this case the trimming along the upper edge at the back is of plaits of stiff white satin ribbon, with swan's-down to finish off.

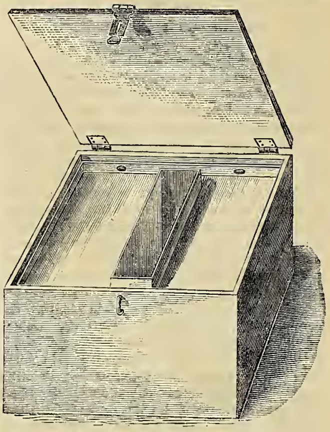


Fig. 4.—LARGE BUTTER BOX.

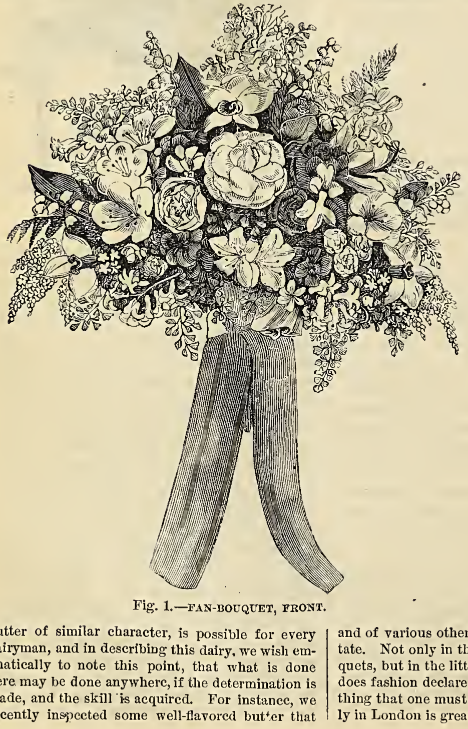


Fig. 1.—FAN-BOUQUET, FRONT.

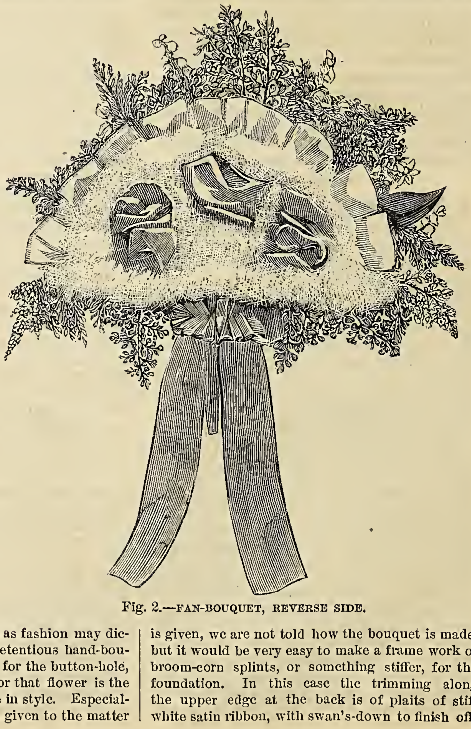
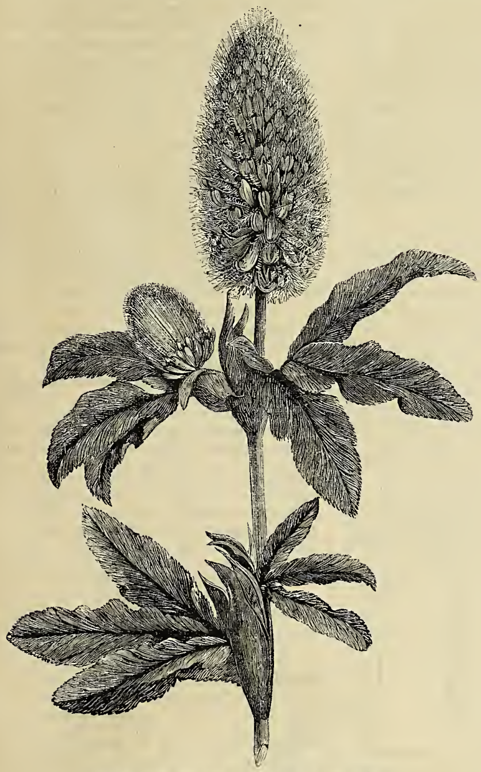


Fig. 2.—FAN-BOUQUET, REVERSE SIDE.

The Ornamental Species of Clover.

Those whose knowledge of clovers is limited to the common White and Red Clover of our fields, will, perhaps, be surprised to know that over a hundred species have been cultivated, and that a large share of these have been, first and last, introduced into European gardens as ornamental plants. If, indeed, our common Red Clover (*Trifolium pratense*) could only be raised with difficulty and under glass, no doubt our ideas of its beauty would be greatly modified. Not many years ago, the Crimson and the Orange Clovers (*T. incarnatum* and *T. aurantiacum*) were popular garden annuals, both brilliant and showy, but of late they seem to have disappeared from the seedsmens' catalogues. A variety of the common White Clover (*T. repens*, var. *purpureum*), is cultivated in European gardens under the name of Four-leaved Shamrock. This, instead of the three leaflets of the ordinary form, has four or five leaflets, each of which has a broad purplish spot on its upper surface; sometimes the whole leaflet is purple, but most generally there is a more or less wide marginal border of green. Several other perennial species are popular in European gardens, among these is *Trifolium rubens*, which we tried this year for the first time, and find a decidedly interesting and somewhat showy plant. The trouble with the so-called perennial clovers is their short duration; especially if allowed to bear seed, the plant becomes exhausted, and behaves more like a biennial than a perennial; the duration of this remains to be tested. It is a rather robust species, growing 12 to 18 inches high, having leaves with three large thick, oval-oblong leaflets, the upper being sessile. The heads of flowers are elongated, cylindrical, tapering above; the individual flowers large for the genus, and of a carmine or purplish red color; the heads are either solitary or produced in pairs, and are about 4 inches long. Each calyx has one of its five teeth much prolonged, and very hairy, and after the flowers have fallen, give to the spike a soft downy appearance, much like that of the little Rabbit's-foot or Pussy-Clover, so common in some places by the road-side, and in dry, sterile soils. The engraving shows the upper portion of the plant somewhat reduced in size. In Europe, the plant remains a long while in flower, but we have yet to see how it endures our hot summers. The botanical name, *Trifolium rubens*, would translate into Red Clover, but that name being in general use for another species, we will get over the difficulty by calling this one the Garden Red Clover.

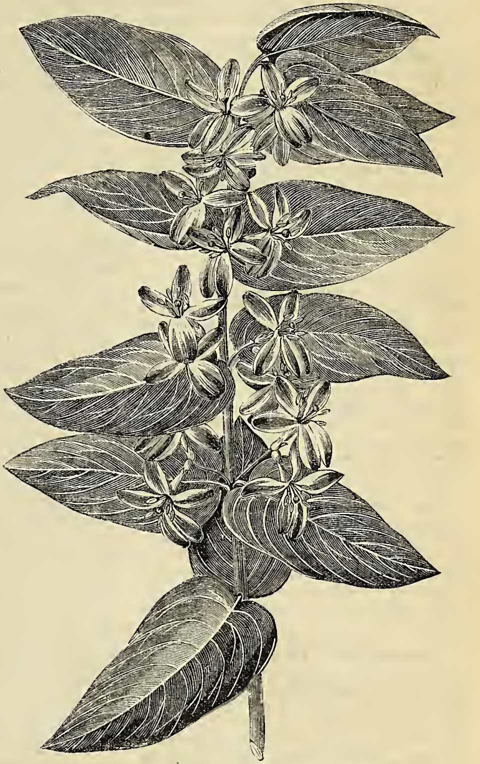


THE GARDEN RED CLOVER.—(*Trifolium rubens.*)

* * *

The Tartarian Honeysuckle.

In making up a list of desirable ornamental shrubs, however few in number, we should be obliged to include the Tartarian Honeysuckle, though we are not prepared to agree with a recent writer who states, that if restricted to only one single shrub, this would be his choice. There are some shrubs, that step at once into the front rank, from which position no after comers can depose them; this is the case with the plant under notice, which, though introduced over a century ago, has held its place in the esteem of all lovers of good plants, and it will no doubt retain it for a century to come. The Honeysuckle genus, *Lonicera*, is divided into two very distinct sections, the plants in which some botanists have considered as sufficiently unlike to be regarded as two different genera. The first section, (genus *Caprifolium* of some), includes climbing plants, with the flowers in heads or whorls at the ends of the branches; our well-known Trumpet Honeysuckle, the Belgian or Dutch Honeysuckles, and others are examples of this section. The second section (formerly *Xylosteum*), includes both climbing and erect species, but the flowers are in pairs in the axils of the leaves; the Japan or Chinese Honeysuckles, of which there are several varieties with different names (*L. flexuosa*, *L. brachypoda*, etc.), are examples of the climbing species of this section, while of the erect species, the most familiar is the Tartarian, *Lonicera Tartarica*. As its name would indicate, this species was first known as a native of Tartary, but it is common in Russia proper and in Siberia. It is usually from 4 to 6 feet high, but old and well-grown specimens reach 10 feet, and if allowed room for development, will be as broad as, if not broader than tall. It is a plant that should not be put into a shrubbery, where it will be crowded by others, but allowed sufficient room, where it will present a regular ovoid outline, and be clothed with foliage from the very base. The small ovate-heart-shaped leaves are opposite, and in the axil of each is a short flower-stalk bearing the flowers, which project beyond the leaves. The engraving, of a small twig of the natural size, gives the shape of the leaves and flowers. At first the berries of the two flowers are quite distinct, but as they ripen they grow together at the base. In the ordinary form of the shrub, the flowers are pinkish or rose-colored, and the berries of a dark-red, but there are several varieties, which are usually kept in the nurseries. The most common variety is var. *albiflora* (or *alba*,) in which the flowers and the fruit are both white; another, var. *lutea*, has yellow leaves and berries. By far the finest of the Tartarian Honeysuckles is one we received several years ago from Ellwanger & Barry as var. *grandifolia*, a name which we do not find in any of the books, and which, from the description, we take to be the same as the French works have as var. *tricolor*. At all events it is a most charming



TARTARIAN HONEYSUCKLE.—(*Lonicera Tartarica*, var.)

shrub, and it is from this variety that the specimen was taken for the engraving. The flowers are somewhat larger than in the ordinary form, and are handsomely variegated with white and red stripes.

Unlike many shrubs, which are only of interest during the short time they are in flower, this Honeysuckle is pleasing during the whole season; the leaves appear early, and last until frost, being all the season of a good green, and where there no flowers at all, the dense and shapely mass of foliage would be worth growing the plant for. It flowers with us about the end of May, and at that time is superlatively beautiful; but when the flowers are off, the shrub does not cease its well doing, for after a while the berries ripen, and it presents another phase of attractiveness. The name *Xylosteum*, which has been given to the species of this section, is from the Greek words for wood and bone, one of the species having hard and bone-like wood; the wood of the Tartarian species is hard, handsomely veined, and is said to make fine walking-sticks.

Glazed Flower Pots for House Plants.

BY PETER HENDERSON.

A writer in a contemporary magazine, says that she has grown house-plants for twenty years in glazed pots, and found them to thrive better than plants do in the porous, unglazed pots. No doubt she is correct, if the atmosphere in which the plants are placed is as dry as that usually found in sitting rooms. The glazed surface will prevent the dry air from penetrating to the soil, much better than would the usual porous pot that we florists, who grow our plants in the greenhouses, find indispensable. There we have an atmosphere charged with moisture, which would soon be destructive to the plants, if grown in glazed pots, or such as were not porous. For the same reason, wooden boxes, or wooden flower pots, are better suited for plants grown in the dry atmosphere of an ordinary dwelling, than the pots usually used by florists. Of course, in any case, care must be used *never to water a plant until it is dry*, and then water freely. The "Adjustable Plant-Box," described in the May number of the *American Agriculturist*, would seem to be just the thing required for nearly all kinds of plants of medium size. The wooden sides will resist the dry air of a sitting-room, just as effectually as the glazed, or painted, pottery ware will, and at the same time the means of drainage from overwatering will be far better. We find, (in correspondence with our customers), one great hindrance to growing flowers in rooms, particularly in the South and Southwestern States, is the difficulty in procuring suitable vessels to plant them in. This new flower-box, if it can be sold at a reasonable price, will be certain to have a large sale, for its lightness, compared with the clay pots of the same capacity, will enable it to be shipped at one-fourth the cost, and also with perfect safety from the breakage, which is another serious detriment in the transportation of the earthen-ware flower pot.

THE WALKING STICK AGAIN.—In June last, we gave an account of a remarkable visitation of myriads of the insect known as the Walking Stick (*Spectrum femoratum*) in Yates Co., N. Y., and asked for information as to the appearance elsewhere. The following, from Mr. E. H. Conklin, Cumberland Co., Pa., is the first response, which, we hope, may call out others. Mr. C. says: "This insect, though not at all common, and seldom numerous, has made its annual appearance in our peach orchards for 40 years, and only once in this time have they been so numerous as to be injurious. In this instance, which was about 10 years ago, these insects denuded a row of Locust trees, that formed a shelter on the N. W. side of a peach orchard. For half a dozen rods from this Locust row, the peach trees were also stripped of their leaves. Previous to this time, we never saw them on any other trees except the peach. As to color, some are light-green and others brown, amongst male and female. The female has a much heavier body than the male."

Notes from the Pines.

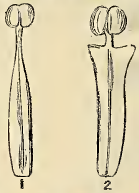
Last year I stated that a very fine specimen of

The Smoke Tree, (*Rhus Cotinus*),

often incorrectly and unnecessarily called "Purple Fringe" in the nurseries, had the year before fairly bloomed itself to death—if we can properly call the mass of little hairy stalks the bloom. At all events the "smoke" was so copious as to conceal every leaf, and the foliage being shut our from the light and air, all the top of the tree died. There being some life in the trunk, it was cut off to leave a clear stump about 4 feet high; last year this pushed numerous small branches, and this year these flowered, and now the whole is completely enveloped in "smoke," from the ground upwards, and makes the finest specimen I have yet seen. Still, there is the same difficulty as before, the foliage is all hidden, and I think that to save the life of the tree, it will be necessary to cut away a good share of the ornamental fuzz.

The Various Deutzias

are among my favorite flowering shrubs; I have endeavored to procure all the species and varieties offered by our nurserymen, and the labels said that I had them all. I noticed that there was a close similarity between my *Deutzia scabra* and *D. crenata*, but gave them no close examintaion, until a note in Gray's "Garden Botany," to the effect that *D. crenata* was generally cultivated as *D. scabra*, induced me to look at them more closely, when I found that all the difference between the two was in the labels, and that I had no *D. scabra*. I then ordered from some half a dozen different nurseries, plants of *D. scabra*; they came into bloom this spring, and every one is *D. crenata*. It is very doubtful if *D. scabra* is in any of our nurseries; at any rate, if the real thing is to be had, I should like to know it. According to the engravings in Siebold and Zuccarini's "Flora of Japan," *D. scabra* has narrower and much rougher leaves than *D. crenata*, but the marked distinction is in the stamens; in the former (*scabra*) the *filament*, or stalk portion of the stamen, is broadest below, and tapers upwards, while in the other the filament is broadest above, with two blunt lobes just below the anther. I send a tracing from the work referred to, which will enable any one to see the difference. Figure 1 is a stamen of *D. scabra*, and figure 2 that of *D. crenata*, both magnified. This is by no means the only case in which a plant has been sent out year after year under a wrong name, and cultivators abroad frequently complain that it is impossible to find certain plants in the trade, as some other has been, no doubt accidentally, substituted, and the error propagated not only from nursery to nursery, but from one country to another. Now that Deutzias are the topic, let me remind you that too much can not be said in favor of the



STAMENS.

Slender Deutzia, (*Deutzia gracilis*),

as it is far from being generally known. It is seldom higher than two feet, forms a handsome clump with gracefully recurved branches, and in June is covered with flowers as white as snow-flakes. I sometimes think if this, and many other choice shrubs, were fitted with some easy-going English name, it would do much to popularize them. It is a choice shrub for any garden, and is admirably suited for cemetery planting. Our florists know its value for forcing, and it is one of the hardy things that may be forced without a greenhouse. When frost has checked the growth, the plants may be taken up and potted; keep them in a cool cellar or frame until February, then bring them to a sunny window, and they will come forward, if not so rapidly as in a greenhouse, quite satisfactorily. It is easily propagated from cuttings, or from the suckers which it produces in abundance.

The Cultivation of Native Plants

has long been a hobby with me. It is popularly supposed that merely bringing wild plants under cultivation, is sufficient to produce double flowers, and all those improvements which distinguish our garden plants. Of course no marked deviation from the wild type can (as a general thing) be produced and fixed, except by a long succession of reproductions by seed, and the selection of such seedlings to breed from as show a departure from the type. Still, when a plant is taken from the woods or fields to the garden, there is to a certain extent a change in the individual plant. It is just such a change as we often see in garden plants; if we remove a plant from a poor, sterile soil to a rich one, or if we turn a pinched and pot-bound plant into the open ground, in both cases the individual shows a great improvement, but that improvement is within certain limits; when the plant reaches its full development, there it stops. The same occurs with wild plants; we take them often from a poor soil to a rich one, and what is of more importance, we give each abundant room; its roots have not to contend (so to speak) for food with the roots of a dozen other plants, each striving as eagerly as itself in "the struggle for existence;" as a consequence, the individual thus favored develops to the extent of its capabilities, and often astonishes those who have only known it under adverse conditions. I was led to these remarks by some clumps of the

Bird-Foot Violet, (*Viola pedata*),

the largest-flowered and showiest of all our native violets—at least of the Eastern States. I recollect seeing, some years ago, in one of the French or Belgian journals, a colored plate of this species, and being much amused at the extent to which the artist had allowed his imagination play in his picture of our beautiful little native violet. But I had not then cultivated it, and were I to see the picture now, I should probably find that it did not do the plant justice. Always attractive for its neat, handsomely cut leaves, and its large lilac-purple flowers, held well above them on strong stalks, in the garden these characters are all the more conspicuous; the plant is much larger in leaves and flowers, without losing that compactness, and air of neatness, which is one of its most pleasing qualities. It not only blooms much more abundantly, but the bloom continues much longer than in the wild plant. I have not had a chance to observe the ordinary form through the whole season, but the white variety (not rare in some localities) last summer proved a continuous bloomer. Whatever improvement may be produced through systematic raising from seeds, or by crossing with other species, this native violet as it is, if given a fair chance in the garden, is worthy of a place in even the choicest collection of hardy plants. Lovers of plants who have the opportunity to cultivate the most promising native species, whether shrubs or herbs, and do not improve it, deprive themselves of what seems to me one of the greatest pleasures of flower gardening. ....Especial pains had been taken with our Tomatoes this year, and never were a finer set of vigorous stocky plants set out, and when three rows, about 200 feet long each, were set, they were pleasant to look upon and full of promise of a splendid crop. One or two mornings after they were set, the man came in and reported that a majority of our fine plants were cut off, and he knew that it was

The Work of the Cut-worm.

It is very common that *the* cut-worm is mentioned while in fact there are many. However, one species effectually did the business for our tomatoes; fortunately we had a plenty more plants, though "the pick" of them had been put out at the first planting. About three-fourths needed re-setting, and to avoid more of the same trouble, directions were given to wrap the stem of each plant with a strip of stiff and smooth brown paper, about 3 inches wide and long enough to make two or three turns around the stalk. This was put around each stem, and in setting the lower edge of the paper was covered with earth, for a double purpose—to shut off access to the plant, and to hold the paper in place. After this only one plant was found to be injured and this was sufficient to show the necessity for care in the matter; the lower edge of the paper was not well secured by the soil, and the free edge was blown by the wind sufficiently to open a passage for the "worm," which was not slow to take advantage of it. So far as these plants went, the paper guard was a perfect preventive. Sometimes

Cabbages Suffer Severely

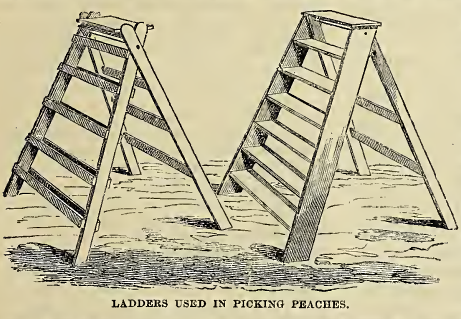
from cut-worms, and I have known them, at the West, to be protected, not by the use of paper, but a maple-leaf was used in the same way; there is no special virtue in the maple, but it was of the most suitable shape of any leaf at hand. The name cut-worm is rather loosely used, it being sometimes applied to the wire-worms, and not rarely to the white grub, the larva of the May-beetle, which is as destructive below ground as the proper cut-worms are upon the surface. (See page 299.)

Peach Harvest—Picking and Packing.

While in some localities the dropping of the partly grown fruit has diminished the crop, this has not been general, and the prospect on the whole is that the harvest, in the Atlantic districts, will be a most abundant one. There is no crop that requires so much care in preparing for market as this; the returns, in ordinary seasons, depend upon the condition in which the fruit reaches the dealer, and in years of plenty, when the market is full, the condition of the fruit is of still more importance, and it becomes the grower to take every possible precaution that the fruit shall reach its destination in the proper condition. Experienced peach growers need not be told these things, but there will be many who this season send their first crop to market, and a few hints may be of use to them. We saw not long ago a picture representing the peach harvest on an estate in Georgia, which was useful in showing what not to do. A number of stalwart negroes were up in the trees picking the fruit. If one cares for the future of his orchard nothing like this will be permitted; the limbs already burdened with more than they should carry, are very easily broken, while hob-nailed shoes will make bad wounds on the bark, and cause gumming.

Ladders.

The owner should provide an abundance of ladders for his pickers; they are usually made like an ordinary step-ladder, and very strong, usually about 10 ft. high, and with a board at the top to serve as a shelf on which to rest the basket; to keep it steady, the ladder is broader at the bottom than at the top. That at the right hand of the engraving—which is borrowed from Fulton's excellent "Peach Culturist"—shows the usual form. These, and everything else required for the harvest, should have been prepared well in advance, but if one has not provided ladders enough he can knock together some that will serve, from ordinary materials. The ladder shown at the left hand is one of this kind; to make it requires four pieces of shingling lath; to two of these pieces, strips of the same material are nailed in pairs opposite each other, to serve as steps. The other pair of long strips are to serve as a support to the ladder, and are furnished with cross-pieces to strengthen them; a connecting rod, with a head at one end and screw with nut at the other, can be made by any blacksmith, and is the only part of the ladder that can not be made on the place. The engraving shows the manner of building it, including the top-board. Much fruit may be picked by standing on the ground, or by the aid of a box, and with a ladder and the aid of a crooked stick every part of the tree may be reached.



LADDERS USED IN PICKING PEACHES.

Pickers and Picking.

Picking requires pickers, and here is one of the grower's difficulties; he can hire hands, but not always brains, and to pick properly requires judgment and thought. Tramps and "bummers" from the cities make their way into the peach districts at harvest time, and the grower is often obliged to take up with a very rough lot; he is fortunate who can command the services of experienced pickers who should be engaged well beforehand. The condition of the peach when it is in a proper state to pick, can only be learned by practice. It must be mature, else it will never come into eating condition, but it must not be over-ripe. A peach that is fully ripe and in eating condition, is too far gone to send to market, and a single peach of this kind in a basket will become bruised and crushed and spoil the looks of the whole. Where skilled pickers can be had, it is customary to pick directly into the baskets which are sent off without overhauling.

Assorting the Fruit.

But it is safer to have the fruit culled by persons more skilled than the pickers. Temporary tables, of sufficient size, are put up in a shady place, or in large orchards there is a packing house for the purpose, and the baskets as they are brought in from the pickers are turned out upon the tables. Here the cullers re-pack, handling every peach; two, and sometimes three grades are made for market, and all that are too small or imperfect, and especially all that are over-ripe, are thrown aside. The distance from market, or rather the time required for transportation, has to be taken into account in deciding upon the proper condition of ripeness in which it will be safe to send the fruit; besides some varieties ripen up more rapidly than others, points which, with others, require no little judgment on the part of the grower. His aim is, to so pack the fruit that it will open sound and fresh, when it reaches the consignee, and yet not so immature that it will not ripen up and become mellow when it finally reaches the hands of the consumer. Of course the different qualities should be marked, firsts, seconds, or thirds; it is the custom to "twig" extra fruit, by running through the cover of the basket a small peach tree twig, with the leaves upon it.

Baskets and Crates.

There has been a great improvement in baskets of late years, and a neat, clean basket helps to sell the contents. The standard size is 5 half-pecks, or ⅝ of a bushel, this size having been adopted by the "Fruit Grower's Association" of the peach districts of Delaware and Maryland. In some Western localities a smaller basket is used, and in Nov., 1875, we figured a neat peck-basket, used by the Michigan growers; this was very generally used in New York last year, but mainly by retailers, who transferred the fruit from the large baskets, or crates, to these baskets, which buyers could easily carry. Crates are coming more into use each year, and especially for long distances, are preferable to baskets; fruit can not be shown in them so well as in baskets, but they preserve the fruit in much better condition. The standard crate of the Peninsula, is made of two ends and a middle piece, 7½ x 14 inches, of ¾-inch stuff; each side of four pieces 2½ in. wide, and 23½ in. long; the top and bottom each of one piece 6½ wide, and 23½ inches long; the side, and top, and bottom pieces, are ⅜-inch stuff, and well secured to the end and middle pieces by nailing; the spaces between the side slats, and at each side of the top and bottom, allow of abundant ventilation. Sometimes the top and bottom are also of several slats. If the crates are to go a long distance, a lath or other strip should be nailed around each end of the crates, so that when packed upon each other, there will be an air-space between. It is advisable to bevel the inside edges of the slats, to avoid bruising the fruit. In filling the crates, care should be taken that they are so well filled that the fruit can not move and get injured; about half fill the crate, shake the fruit down, then fill it up with the fruit so far above the edge, that it will require some pressure to bring the cover down to its place.

Facing, Topping, or Plating.

Those who buy small baskets of fruit at some retail stores and stands, know that the dealers well understand the art of "topping" the baskets, and find that all of the fine fruit is in a layer at the top, while the rest is of inferior quality; indeed, some of them are given to "bottoming" too, which they do by placing an abundance of paper in the bottom. "Topping," or "plating," is now rarely done by the growers, as those regularly in the business know the value of a reputation for honest packing. But deception of this kind is different from "facing," which is legitimate, and only makes the article look at its best; the fruit being of even quality all through, facing is done by regularly placing and rounding up the top layer, carefully turning each peach so that its "sunny side," or colored cheek, will be uppermost—a little matter, but it pays.

Marking.

Plain and distinct marking will prevent mistakes, and a grower should have stencil plates for this purpose. With baskets, the name of the commission house is marked on the cloth cover, and the owner's name permanently on the side of the basket; also mark quality plainly. Though crates are never returned, it is important that the grower's name should be on these also, for sake of identification. Always notify the consignee well in advance, by mail, or by telegraph, of the whole number of baskets or crates, and how many of each quality.

THE HOUSEHOLD.

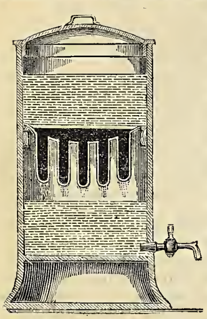
☞ *For other Household Items see "Basket" pages.*

A Vegetable Washing Machine.

In the Oneida Community, a large number of people are brought together to form one extensive family, and their kitchen operations are consequently on a correspondingly large scale. Many of the minor operations in domestic matters, which, when performed in an ordinary family seem to require but little time and labor, when multiplied to meet the wants of a family as large as that of the Community, become onerous, and time consuming. Washing potatoes and other vegetables preparatory to cooking is one of these, and it is one in which, where much is to be done, the cook will gladly welcome any aid. Among the other labor-saving machines devised by some inventive member of the Community, is a machine for washing potatoes and other vegetables, of which we give an engraving on the next page from a photograph furnished by J. Leonard, of the Community. It consists of a slatted cylindrical crate, provided with a crank, and so arranged that it may be revolved in water contained in the square tub, or it may be lifted quite out of the water by means of the handles of the frame in which it is hung, and carried over to discharge its contents into the wooden funnel, seen at the side of the tub, from which they fall into a basket or whatever may be placed beneath, to receive them. The potatoes or other vegetables are placed in the cylinder through a door not shown in the engraving; they are revolved in the water for about three minutes, when by a single lift of the crate by the handles, they are dumped out perfectly clean. Mr. L. states that though the idea was original with the inventor, they found out afterward that a similar machine had been in use for many years in starch factories. In large families, schools, or other institutions where cooking is done on a liberal scale, a machine of this kind will be found to save a great deal of unpleasant labor.

Filter for Water.

A very readily made filter for home use may be made in a few minutes, with very easily procured materials. There is first needed a tin pail, divided into two parts, the upper one slipping into the other. The upper one contains the water to be filtered. Near the bottom of this is fixed a peculiar shaped bag, made of stout cotton cloth, doubled if need be, to prevent the charcoal from passing through with the water. This bag is very shallow at the top, but has several long pockets, as shown in the engraving. These are filled with charcoal, both fine and coarse, and the top of the bag is also covered with a layer about an inch thick. There is a cover made to the bag, which stretches across the pail, above the upper layer of charcoal. The bag should be fitted very tightly to the sides of the pail, and an elastic hoop may be used to press it against the sides. When water is poured into the upper pail, it filters through the charcoal, and is rendered free from many unseen impurities. There are many districts in which at this season water is scarce and of inferior quality. In such places no water should be drank, unless it is first filtered or boiled. Impure water is perhaps the most prolific source of those diseases, known as summer complaints, and is most dangerous when the hot weather favors the growth of vegetable and animal bodies, too minute to be seen without a microspcope.



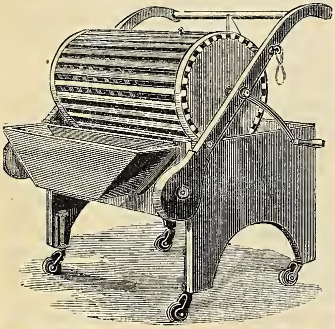
A FILTER FOR WATER.

Home Topics.

BY FAITH ROCHESTER.

Husbands and Housework.

These are indeed hard times. None but those upon whom the woe has fallen, can appreciate the words "out of work." The sight of it is enough to set any one who believes in "cause and effect," to thinking about the cause and the cure for misery of this kind. But a dissertation upon that theme lies outside the province of the Household columns. It has, however, occurred to me many times, that men who are out of work, are by no means justified in sitting idly about their premises, or lounging in adjacent stores and groceries, when their wives are overburdened with the cares and labors of the family. Every household needs two heads, the father and the mother, a "united head." But when a father is so situated that he is unable to contribute to the family support, he must reflect that he becomes a positive burden to the family, unless he can make himself useful to it. The class of men likely to get out of work, usually have hard-working wives, who need holidays quite as much as their husbands do. Sometimes these women not only do the family housework and washing and child-training, but also add to the family finances by sewing, washing, writing, or other means. And there are husbands of such hard-working women, who feel (or seem to feel) that it is only right and proper that they should lounge about, reading the paper, playing with the children, chatting with the neighbors, while their wives have one unceasing round of household labor. The fact is, they dislike "menial" tasks, and they forget the feelings they professed as lovers, toward the women now their wives, and allow those whom they once aspired to protect and cherish, to perform for their able-bodied husbands the most "menial" services. They don't think a word about it; but they ought to think. They fall in with the ordinary drift of things, and only attempt to meet the requirements of public opinion in the locality where they dwell. I remember that, when I was teaching in Pennsylvania, Mr. Smith was laughed about because he wheeled the baby carriage when he went out walking with his wife and child, instead of allowing his wife to do that part, besides taking care of her skirts. It would have been considered quite enough for him to swing his cane beside her, prepared most chivalrously to defend her in case of attack—"sword arm free," you know. Like the savages, who can not stoop to "menial" offices, because they must keep always alert and vigorous for the chase, some of these noble men and brethren must be saved from all the distracting cares and petty concerns of the family, that their superior powers may be in readiness for doing big things when the time for doing big things arrives.



THE ONEIDA VEGETABLE WASHER.—(*See page* 303.)

I believe in a division of labor; and I do not subscribe to a rather common notion among some reformers, that husbands and wives would always be happier if they worked side by side in the same field; and I sympathize somewhat with women who say that they shouldn't want a husband "always round under foot!" But I do say that a hard-working woman never admires her husband more, than when having no work to do in his own field, he comes cheerfully over into her field, and bends his stronger shoulders to help her bear her burdens, that she may share in his leisure.

Don't I know? Didn't I see a stalwart laddie, "rising of" forty, working in his shirt sleeves and an apron, over my kneading-board, soon after sunrise yesterday? I can testify without any mental reservation, that the bread on our table to-day is of excellent quality. It is enough for one woman to get breakfast, skim and strain milk, put up the dinners for school, and dress the baby, without having also to knead bread, all before breakfast; and so it is lucky for her if the "gude mon," off work for a few days, stands ready to "lend a hand."

Men, generally, have no idea how much they can do to help, if they set about it. They have an uneasy feeling sometimes, that they ought to take hold somewhere, but they don't know how to begin. I said to a man with no particular work to do, who sorrowfully told me of his wife's ill-health and hard work, "Of course you help her do the washing."—"Oh yes!" he answered, "I bring in the wood, and get all of the water for her."—And it never occurred to him that Justice could ask more of him, that noble creature, a man! He to bend over the wash-tub, applying his superior mind to the discovery of grease spots, and his manly strength to the rectification of soiled garments? No doubt the kind hearted fellow did sometimes go farther, and graciously dandle his own babe on his knee, when it was sufficiently amiable to please him, in the idea that by thus tending baby, he was helping his wife. He, the strong, thus choosing the easier work, in order to give her, the weak, a chance to do the harder task unhindered. This sort of thing is extremely common in families, and women who are of the angelic type, never feel themselves defrauded of their rights, but continue to smile as the law directs. Others "fret inwardly," or take refuge in sarcasms. Frankness is better.

Say to this reasonable but thoughtless husband of yours, something like this: "Now just look at it, you and I are the heads of this family. I certainly am no more responsible than you are for the number of mouths to feed and bodies to be clothed, or for the daily and yearly round of work that must be done here. I am willing to work as hard as you do for the prosperity of the family, but I think it altogether fair that you should work as hard as I do. Now, while you can not work at your own proper business, (and sometimes this sort of thing goes on for weeks and months at a time), or get any paying work to do, suppose we make a division of labor right here in the family. You can do all the sweepings, you can knead the bread,"—and so on, consulting his tastes and the amount of "faculty" or "knack" which he is likely to bring into the partnership. If your sleep is broken by care of children, and if your nerves are overstrained by constant and conflicting cares and anxieties, your husband ought to know it, and give sympathy if he can not give help, but it is a pity if you have to tell him the facts and beg for aid.

While I write, I remember that there are selfish wives, who would shirk all care and toil, preferring to live like the lilies of the field, whatever burdens may fall upon their husbands, and I wish to give no countenance to such. I do not like to think of marriage as a "partnership," but it should not fall behind a business union in the essentials of justice.

Bread Making.

For a long time nothing has been said in the Household-columns upon this all-important subject. Yet recruits are all the time coming forward, who wish to be told minutely just how to make bread, what yeast to use, how, and when, and where to set the "sponge," or bread batter, for its first rising, when, and how long to knead the dough, when, and how to make and bake the loaves.

It seems to the uninitiated a very formidable undertaking, requiring peculiar judgment and discretion; yet it cannot be very difficult to learn, else how does it happen that this little girl near me, just past her eighth birth-day, has made ten or a dozen goodly batches of bread within a half year, and never a sour, or heavy, or tough loaf in all that she has made. The manipulation was all her own, but mother's "judgment" was always at hand and freely used. The first sponge was set in a pint basin, but every one since has been sufficient for at least three common bread-tin loaves. No Kindergartening at our house has proved more entertaining, and perhaps none more profitable than bread-making. At least one boy has learned the art as a pastime, and whatever may be his future lot, need never starve for good, light bread, when proper materials can be obtained. It is really help, too, for a mother, when her children, with clean hands and cheerful hearts, work at the bread dough, with a wholesome ambition to produce the sweetest, and lightest, and finest possible loaves of bread.

There are many ways of making good yeast bread. The very best, in my opinion, is mixed with fresh, sweet milk. Many consider sweet skimmed milk with a little butter melted in it, just about as good, but if you add the butter, there is no economy in substituting skimmed milk for fresh. The far-famed Parker House bread is made, I am told, of simply yeast, flour, and water, and I am very certain that delicious bread, sweet, light, and tender, can be made from these three things alone, when they are of good quality, and carefully and skillfully used. This care and skill any well-disposed child can learn, so no housekeeper must consider it beyond her attainments.

Many good recipes for yeast are given in books and papers, and every neighborhood has housekeepers who make excellent yeast. I always use, of late, some form of dry yeast, such as any grocery store will furnish. It costs no more than home-made yeast, and saves a deal of care in either hot or freezing weather, requiring only a dry place for storage. It is quite as good as jug yeast.

It is usually most convenient to begin the bread-making, or "set the sponge," at night, and so get the baking done early the next day, but it can all be done in the same day, if desired, by beginning before breakfast. This brings the baking late in the day, and most of us do not like it. At night, or in the evening, we make a soft batter of warm water and flour and yeast, the quantity of each depending upon the number of loaves desired. The proportions are generally the same, though no precise rule can be given, as flour and yeast differ in their properties.

Miss Beecher says that it takes about a quart of flour to make each loaf, and for four loaves a quart of wetting. But loaves vary in size. For a baking of this size, you need about three-fourths of a cake of good dry yeast in summer, in winter a whole cake. This yeast must be soaked in warm water half an hour or less before using. The yeast will not work if scalded. A gill of lively, soft, or baker's yeast, answers for the same sized baking. Take a portion of your flour, (say two quarts), and (if you do as I do) pour half of your wetting into it boiling hot, only scalding about half of the flour you use in the sponge. Use the other half of the wetting lukewarm, and see that the batter is below the scalding point when you add the yeast. In summer you may make the sponge at a lower temperature than in winter, but it should never be cold. Make it of such thickness that it will not separate or become watery over the top, but thin enough to stir and pour easily. Set in a warm place, covered loosely—wrapped up warm in winter.

In a warm kitchen this sponge rises in from three to five hours; if the materials are good, it seldom sours during the night, but must be looked after very early, and if light, must be kneaded without delay. Some housekeepers stir dissolved soda into it, always, at this point, whether it is sour or not, but this is sheer folly. If the flour and yeast are good, it is very seldom that a good housekeeper has occasion to put any soda into her bread. If the bread smells sour, (not simply yeasty), or tastes sour, put in dissolved soda in the proportion of a teaspoonful to a quart of wetting used in the sponge. Dissolve the soda in warm water or sweet milk, (and I add to it two heaping teaspoonfuls of sugar), and stir it into the sponge before kneading. Stir in flour until your batter is too stiff for your strong spoon, then begin to work with your hands, keeping flour between your hands and the soft dough, and always between the dough and board. As soon as the bread is stiff enough to knead without sticking, cease to work in flour, but knead with as little flour as possible upon the board, and work it hard with the hands for at least half an hour. The "Parker House" baker says he kneads two hours, but of course he makes larger "batches." Put the dough back into the pan or tray, and keep it warm.

The dough should now rise until it doubles in size. It must rise enough, or it will not be light and elastic in texture. It must not rise too much, or it will lose the natural sweetness of the wheat, and about all that one can say here is, "cultivate judgment." If, at this stage the bread turns sour in any degree, it is still possible to neutralize the acidity by the use of soda, and this is the best way to do it: mix soda and dry flour together, and knead them into your loaves very thoroughly. The dough requires a very thorough kneading, without more flour, when made into loaves, in order to secure a uniform texture. If you plan four loaves, you may knead half of it for a few minutes, then work the other half as long, and then divide into separate loaves, and knead each one well before putting it into the well-buttered tins. If the dough is sour, half a teaspoonful of soda for each loaf should be mixed with a little flour and kneaded in. Though the bread may be nice, I never feel that I have been very successful when I have had to use soda. The loaves should be set in a warm place, and allowed to rise light, or double in size, before they go into the oven—not too light, as they are pretty sure to rise a little more after they go into the oven, unless the oven is too hot for bread. Prick the loaves on the top with a fork or knife, when light, before baking, to prevent a loose upper crust. Bake steadily for an hour or a little longer, according to the size of the loaves.

Repairing Bed Comforters.

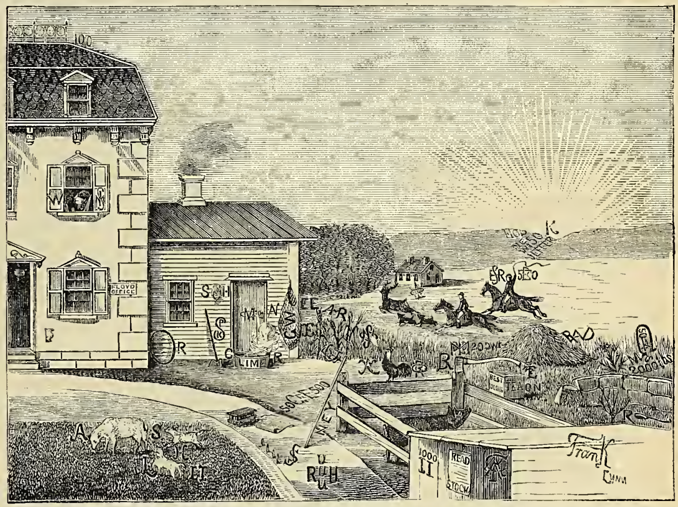
Complaint is made of our "heavy" cotton comforters. Wherefore "heavy"? They are not so when new, but the cotton becomes packed by pressure, and especially by washing. Comforters, which are used as coverings in winter, should not be used as mattresses over straw-beds in summer. This, of course, makes them hard and heavy. Before putting them away for the summer, they need some cleansing, but, unless the covering is really soiled, the sunshine and fresh air will freshen and sweeten them properly. Hang them out during the whole of at least one sunny day, then put them away, not packing them too closely. If they must be washed, untack them and wash only the covering, laying the cotton out in the hot sunshine for a day or more, then tacking the whole together as before.

Old Bed Quilts.

These must be washed when much soiled, and a washing machine and wringer seem almost indispensable. Plenty of suds should be used, and a thorough rinsing be given. If they happen to hang through a good pouring rain, it will do no harm. They can be patched up, when very badly worn out, more easily than some imagine. If pieced in large blocks, they can be patched with dark or light, according to the shade of the worn portions, so as to look almost as good as new. Of course they need not be ironed.

To Wash Blankets Nicely.

I have seen various directions for this work, but a few things seem essential in every case: to avoid hard water and resinous soaps, to wring without twisting (*i. e.*, with a wringer), or not to wring at all, to use water of the same temperature all through, or to increase in heat during the changes, not to rub the soap upon the flannel, but mix it with the water. Flannel is of so porous texture, that it is easily cleansed in good suds without much rubbing. Hard rubbing tends to "full" the cloth, and to rinse in cold water flannel that has been washed in warm water, is a sure way to shrink and harden it. From cold to warm, but never from warm to cold. I have seen the direction to rinse flannels in soapy water, but I am sure there is no value in this. The clean, warm rinsing water is sure to be soapy enough, if good suds have been used in the washing. One suds or two may be used, according to the degree to which the flannels have been soiled. When they have been rinsed, two should take them, one at each end, and shake and snap them well, to make them more soft and fuzzy.



No. 461. Puzzle Picture.—By Frank.—This is a patriotic puzzle picture, and was sent by Aunt Sue to appear in July, so that you could, very properly, let the making of it out come in as a part of your 4th of July celebration. While it would have been more appropriate for July 4th, it is not out of place on August 4th, or any other day of that or any other month, as you are to find in the picture the names of 53 men, and men too, whose memory should be honored by all Americans for all time. The answers, mind, are to go to Aunt Sue.

BOYS & GIRLS' COLUMNS.

The Doctor's Correspondence.

I do not like to begin the answers to my young friends with a lecture—perhaps you will think it is a scolding—but we had better have the disagreeable part first, and there is such frequent cause for it, that I would put it where every one of you will see it. I wish that

EVERY BOY AND GIRL,

of the whole *American Agriculturist* family would recollect, that it is regarded as decidedly improper to send what is called an *anonymous*, (that is, nameless), letter to any one. It is often done through thoughtlessness—as in the case of "Boy of 12," but is nevertheless very impolite. If you have anything to say, to which you are ashamed to put your name—don't write it. But whenever you do write a letter to any one—always be careful to put your address in full, and your name in full. I wish every one of my young friends to begin now, and make it a *rule through life*, to always sign your name to every letter, and be equally careful to give your address, Post Office, County, and State. One thing be sure of—never write anything to any one that you will be ashamed to see again, with your name to it. * * * You will recollect that in last June's "Correspondence" I told you about

AN INSECT THAT BUILDS A STONE HOUSE,

a Caddis-worm, the larva of one of the Caddis-flies, that makes a neat little case of pebbles, and gave an engraving of the animal and its case. As the insects were all dead when they reached me, having dried in the box, I asked for some more, to be sent packed in moss, in a tin box. In due time, the box with a nice lot of Caddis-worms came; the insects were all alive, but every one had left its stone house, and was crawling among the moss. I put them in water, hoping that some of them would go back to their homes, but not one would do so, nor would they make new ones, though I gave them building materials. I suppose that the constant jarring they had on the railroad frightened them "out of house and home"; at any rate, I was quite sorry, as I wished to watch their ways and learn more about them, that I might tell you. It was very kind of Mr. Albert B. Castle, of Frederick, Md., to be at the trouble of getting this second lot, and it was no fault of his that they did not behave themselves properly... Here is a letter from "W. I. N.," Hightstown, N. J., who wishes to know about

"A FRESH-WATER LOBSTER,"

which he finds in the streams in his neighborhood. He has one that is 3½ inches long in his aquarium, and thinks that, except in size, it is quite like the common lobster, as it moves in the same manner, and snaps at objects with its claws just as a lobster does. The common name for our friend's "Fresh-water Lobster" is the Crawfish, and while it much resembles the Lobster, naturalists find abundant differences between the two, so much so. that they give them different names ; the Lobster being called *Homarus*, and the Crawfish *Astacus*. "W. I. N." is not the only one who has asked about the animal, which is found in most streams, and is especially abundant in the South and West. This, the Crabs, the Lobster, the Shrimps, and others, including some very small animals, called "Sand-fleas," all belong to the

CLASS OF CRUSTACEANS,

so-called, because they have a *crusta*, or outside crust, or shell. Some of them may be mistaken for insects, to which they are closely related ; they differ from insects in the number of divisions of the body, and number of legs ; the true insects have six legs, while these have 10 or more, and breathe by gills; so you will see that the crustaceans are very unlike insects. To describe our Crawfish, we must borrow an engraving from Prof. E. S. Morse's "First Book of Zoology," a work which I wish every wide-awake boy or girl, who wishes to study animal life, could have. Here, figure 1, is Prof. Morse's portrait of one of the Crawfishes, for we have several. You will see that there are two unlike parts, the body and head are not distinct, but all in one piece, or shield, and make the upper part, while the lower part (that we in the lobster incorrectly call the "tail," but which is really the abdomen,) is made up of rings, and in the engraving is shown curved under the body ; at the very end of this part are some broad plates, or fins, which are shown separate in figure 2 ; these the animal uses in swimming, and can go backwards very rapidly. Beginning at the head end, you will notice its curious eyes, which are set upon stalks, so that the animal can push them out and turn them, to see in all directions ; then there is a pair of long feelers, and a pair of shorter ones, which are double. If you should carefully examine the mouth, you would find it well guarded by six pairs of parts, some of which are jaws, and others are more like paws or feet. Then, from the under-side of the body, are five pairs of legs, the forward pair much larger than the others, with powerful pincers at the end ; these they use to fight with, to catch their prey, and, sometimes, to nip the toes of boys who are not on the lookout. The next two pairs of legs end in small nippers, and the other two pairs have only a single claw. The lower half of the animal, or abdomen, is made up of rings, jointed together, and underneath, on each ring, is a pair of flipper-like bodies, which are used like fins in swimming forwards, and in the female they hold the eggs until they hatch. There are many other curious things about the animal, but we can not now look inside of it to point them out. The shell is hard, and the animal can not grow, so occasionally (once a year it is supposed) the creature gets out of its shell. Lobsters and Crabs, *moult*, as it is called, in a similar manner ; the body part separates from the abdomen, and the shield of the body cracks down the back ; the animal wriggles its body out of the opening, and then pulls out one leg after another,

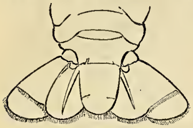


Fig. 2.—TAIL.

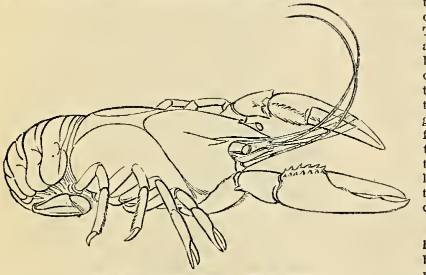


Fig. 1.—A CRAWFISH. (*From Morse.*)

LIKE PULLING OFF ITS BOOTS,

until at last it is quite free. The animal is then a helpless, weak, soft thing, unable to defend itself, so it hides away from all enemies, increases in size ; its skin gradually hardens, and at length becomes a shell. Sometimes one of the legs is too tight a fit, and will not come out of the "boot" ; in this case, after trying for a while, the animal finding that it will not come off, just leaves its leg, and goes away without it. You will think that, having so many legs, one the less will make no difference. Not so—the leg grows again ! These animals have a droll way with their legs ; if, in fighting, the enemy gets fast hold of a leg, they let it drop, and get off with the rest. The Crawfish feeds on any kind of animal food, living or dead, even eating carrion. In some places they cause much trouble by making holes in embankments, as they are fond of burrowing, and sometimes they live in low grounds at a distance from streams, in holes containing water. The European Crawfish is larger than ours, and is much esteemed as food....There is another animal that I was asked about some time ago—

THE COMMON "SOWBUG."

I was asked if it were an insect, and if it did any harm. No doubt every boy and girl, almost, knows this animal, which is very common in cellars, under logs and boards that have laid long on the ground, and in other damp places ; because it is called Sowbug, they have most likely supposed it was a bug, or insect. The engraving, fig. 3, also from Prof. Morse's book, shows the form of the animal magnified, and the line at its side gives the natural length ; it is of a bluish or lead-color, and, having an abundance of legs, it travels off in a lively manner. The Sowbugs are called Wood-lice in England, and sometimes, on account of their color, "Slaters." This is not an insect, but a crustacean, and belongs to the same class with the Crawfish. I have not room to point out how it is like, and how it is unlike the Crawfish, but one of the differences is in the number of feet, for which reason it is placed in a different division of the class. Like the Crawfish, the Sowbug carries its eggs under the body. While these creatures can, and do, live on decaying plants and other useless matter, they are so fond of other things, that we must, on the whole, look upon

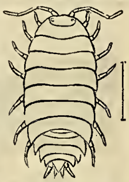


Fig. 3.—SOWBUG.

THE SOWBUGS AS ENEMIES ;

they are fond of fruit, and, though they do not eat much, they make unpleasant holes in strawberries and other fruits ; then there are some delicate garden plants that they destroy, and in the greenhouse they will make great mischief. They are especially fond of the roots of those plants known as Orchids, which are, perhaps, the most costly of all hot-house plants, and gardeners have to keep a sharp look-out, and catch the Sowbugs in traps made of a scooped-out apple or potato... Master "J. W. W.," Gilmores Mills, Va.. wishes me to describe

THE COMMON HOUSE-FLY.

I do not wonder at his wishing to know something about this very common, and very annoying insect—I should like to know about it too. Dr. Packard, one of the recent writers on insects, in a popular work on "Our Common Insects," tells us that the changes of the fly have not been traced in this country ! It is strange that our entomologists give very full accounts of far-away insects that few care about, but when it comes to the commonest of all, the pest of every house, they admit that they are not sure whether our fly is the same as that of Europe, or a different species ! The English works, that I have access to, tell but little. From what I can pick up here and there, it appears that a few flies, enough to continue the breed, live through the winter, hidden in the cracks and crevices of our houses. These come out when the weather gets warm, and the first that we see are those that have been wintered over. Doct. Harris wrote, over 25 years ago, of our fly, "It is probable that, like the domestic fly of Europe, it lays their eggs in dung, in which its larvæ [maggots] live, and pass through their changes of form," and so far as I can find out, the scientific gentlemen, who study insects, are content with this "probable" statement, and have added nothing, so far as I am aware, to the history of the house-fly....The same correspondent asks if I think it proper to

KILL THE BLACK SNAKE ;

he has been told that this snake should be spared, because it kills rattle-snakes, while he thinks it should be killed, because it destroys so many insect-eating birds. I have never considered the question. I very much doubt the rattle-snake story ; if I were sure that the Black Snake did kill useful birds, I should prefer to dispense with the snake. As a general thing, I protest against the killing of snakes, merely because they are snakes. My young friend must act according to his knowledge ; I can not decide for him.. .Master "J. W. W." has still another point. He was told by an "intelligent young man," that the

COMMON EARTH, ANGLE, OR FISH-WORM,

was the larval, or grub, state of the Fire-fly, or "Lightning-bug," and that, in the course of time, the worms would turn into the perfect insect.—This is a great mistake. The Earth-worm does not "turn into" anything ; it is as complete an animal *in its way*, as a dog, a horse, or even as a young man is, according to his kind.

Aunt Sue's Chats.

J. B. W. and several others have asked for canvas-patterns for tidies, etc. It does not seem worth while to go to the expense of engraving them for the *American Agriculturist*, when they may be procured for a few cents at almost any worsted store.

Florence M.—The prettiest way of arranging flowers that I have seen lately, is to fill your saucer or dish with fresh, moist, green moss (*polytrichum* is the best), and stick your flower-stems into it. The effect is very pretty, and a few flowers make quite a show. Keep the moss wet. With that arrangement you will not need a "cover to hide the stems." For answer to your other question, see notice to J. B. W.

M. R. asks, "Is it proper to have a spit-box in a parlor?"—I should like to be able to answer, most emphatically, "*no*" ; but if your guests have acquired that most abominable habit—spitting—it may be necessary to have the horrid thing in the room, to save the carpet. There are times, however, when I think the mere appearance of the utensil invites contributions. I would not have selected this subject for a lecture, but as M. R. has started me, I should like to add, to all the boys (I dare not say men), who read these lines, please don't ever spit, if you can avoid it. It is an ungentlemanly habit.

Mary Augusta writes: June 11, 1877.

"*Darling Aunt Sue* :—I am a country girl, and as I am a blonde, I of course have plenty of freckles, as all girls and boys do that are not afraid of the fresh air. Now, Aunt Sue, I want you to be so kind as to publish a recipe for making a wash for my face, to take them off, one that will not spoil my skin, as all, or nearly all, of these advertised washes do. Now, if it is in your power to do anything in that line, or if you can't, I will always be your loving friend, Mary Augusta."

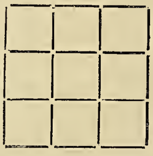
Well, my "darling," Mary Augusta, I have often read recipes for removing freckles—lemon-juice, borax, and water, etc., but I never saw or heard of any that were efficacious (except those which took "skin and all"). I suppose you could get rid of them if you should stay in bed, send for the doctor, and not go out of the house for three months or so. How would you like to have a clear complexion at that expense? The best remedy for freckles that I know of, is to be so pleasant, unselfish, good-natured, and jolly, that everybody will be glad to see your freckles come into the room. I spent one summer at the sea-side, where there was a young lady with a very fair complexion, but she always muffled herself up in veils and wraps, even when she went in bathing. I noticed that, although strangers were attracted by her good looks at first, the attraction didn't last long, and the "strangers" soon deserted the beauty and had a good time with the freckled girls. So never mind your freckles, dear. I rather like them.

Answers, too late for notice, to the liquor agent's account, have been received from Mrs. R. H. S., William S. F., Jesse M., Vox Pueri, O. H. L., C. C. W., and John L. D. (Jesse M., you will have to try again.)

Very clever answers have also been sent to the "Puzzling Puzzle" in the May No., page 187, by C. H. Hill, W. C. Harvey, George White, W. S. Fuller, Webfoot, O. W. West, G. A. W., and W. W.

The latter offers a puzzle, which, though not original, is very good, and may be new to many of our readers. Place 24 sticks (toothpicks or matches) so as to make nine squares, thus:

Required the removal of eight sticks or matches, so as to leave two, and only two, complete squares.



When sending the prizes to those who answered the prize enigma, I requested an acknowledgment of the parcels, and asked most of the recipients to tell me what word gave them the clew to the whole. Only eight have responded. I trust that the other four prizes have not gone astray. I should like to publish some of the pleasant letters received on the subject, but lack of space forbids. Many inform me, conscientiously, that they were assisted by other members of the family. That was all right, provided that only one of that family sent the answer. Geo. M. Taylor says that he fixed upon "Ounce" for the animal, and "stuck to it." And adds, "I sent a copy to two friends, who are reputed experts, and they have been working at it since. One of them has the aid of a philologist, who is trying also. but none of them have got further than 'tiger' yet, for the 'carnivorous animal.'"—J. B. M. and C. S. Campbell guessed the squirrel-fur ("Vair") ; and Jessie L. Kirk, Mrs. Thomas, and Abraham Resh found "Macaroon," and now *I* wonder how they ever found that word as a definition for fop.

Will Frederick Bruce, Jas. A. Windsor, Jr., Edward D.

Campbell, and May Goldie, please send me word whether they have received their prizes?

Thanks for letters, puzzles, etc., to T. Mills Clark, Erich, Bessie Jones, F. W. C., Sally Ratus, Mary A. E., Effie, G. W. S., John W. Wheatley, and C. W. H.

Aunt Sue's Puzzle-Box.

The Double Acrostic is a very pretty style of puzzle, and may be made interesting and instructive. I can scarcely believe that any of my readers need any teaching in the matter of their construction, but should there be some who would like to be enlightened, they can read the following remarks. Select two words having the same number of letters in each; e. g., bird-cage, book-case, Jupiter-Neptune, Charles-Dickens, etc. We will take the latter for our use at this time.

Write the letters forming the Christian name in a perpendicular row (number them), and the letters forming the surname in another perpendicular row exactly opposite.

Thus——1 C......................D
2 H...................... I
3 A.......... C
4 R......................K
5 L......................E
6 E.................... ..N
7 S....... ....S

Now find words beginning with c, and ending with d, with which to fill the first line;—cold, card, child, cod, etc., and select the one which you prefer to define. We can fit the above seven lines with cod, Hayti, almanac, rock, love, Ellen, synopsis. Now define them. 1. A fish. 2. An island. 3. A calendar. 4. A mineral. 5. A passion. 6. A girl's name. 7. A compendium.

State that the initials give the Christian name, and the finals the surname of a celebrated author, and your double acrostic is ready to be worked out.

Now I will give you one to find out. You will see that it has eight letters in each column. You may be able to find the first item at once; if not, put a cross down upon your slate or paper in place of the letter you need. The object of filling the space with a cross, is to keep before you the number of letters needed and to show what items you lack. You can scarcely hope to get item No. 2—"The Capital of a European country"—without the aid of the other items, as there are so many countries; so skip that (after putting down another cross, below the first, instead of the letter). and try the third item, which is more definite, and will give you a clew to the poets' names, for which you will now have to search:—two names, each containing eight letters. the third letter of the first name being the same as the initial letter of the group of islands, and the second poet's name having for its third letter the last letter of the group of islands. Having found two names answering the requirements. write them down (as given in the sample—"Charles Dickens"), and fill in the items, which will now be comparatively easy (if you have found the right poets), as you have the first and last letter of each item. Here it is:

DOUBLE ACROSTIC.

The initial and final letters give the names of two popular poets.

1. An island in the English Channel.
2. The capital of a European country.
3. A group of islands west of Greece.
4. A city in Ohio.
5. A country in Europe.
6. One of the United States.
7. A river in Spain.
8. A city in the north of France.

D. M. W.

ANSWERS TO PUZZLES IN THE JUNE NUMBER.

POSITIVES AND COMPARATIVES.—1. Right, writer. 2. Prop, proper. 3. Mast, master. 4. George, Georgia. 5. Kate. Cater. 6. Scamp. scamper.

* * *

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

☞ Correspondents will save time, if they will address their letters to me, *until the first of November* (not afterwards), to "Rowayton, Fairfield Co., Conn."

The Doctor's Talks—How Things are Done in Other Countries—Something about the Japanese.

When I began to talk about the doings in other countries. I did not expect to do so every month, but I had no idea, until I looked, that it was three months since the last "Talk." How the time runs by! The space is small, and the things I write about are many, and I wish to get in as great a variety as possible. A gentleman who passes a good deal of time in Japan, sends to his friends here various little articles from that country, but there is nothing among the presents that please me so much as the photographs he has sent, especially those of the different classes of people and their ways. There is something about photographs that makes them more satisfactory than any drawings or other pictures; perhaps it is because we feel that they represent things just as they are, and the imagination of an artist has had nothing to do with the picture. In Japan the classes are very distinct, and the work-people, the farmers, and others, dress very differently, and live differently from the nobles and higher classes. We have had within a few years so many Japanese in this country, that we have become quite familiar with their faces; but these are from the educated, if not the wealthier classes, they dress as we do, and give us no idea of the Japanese in general. It is wonderful that a country, which has, until 25 years ago, kept by itself, and shut out all foreigners, should now be so quick to adopt foreign ways, and to introduce all kinds of useful articles and customs from other countries. The people are changing so rapidly, that in 25 years more, all that we shall know of many of their customs, will be preserved in photographs and other pictures.

In all cities of the East, the stranger is surprised by the amount of business carried on out of doors; not only do people work at their trade with no other shops but the streets, but a vast number of articles are sold by merchants who carry their whole stock upon their shoulders, and have the open air for their stores. In the cities of Japan this is carried on to a great extent; not only do the stores and shops travel about, but even the libraries —for the people are great readers—go round on the shoulders of men, to their patrons. Figure 1 shows how the markets are managed, and being from a photograph, is very accurate. These men have the usual pole, made of bamboo, as that is both light and strong; this goes across the shoulders, and from its ends are hung the baskets, boxes, or whatever is to be carried. They are selling, if we except rice, the chief articles of food—fish, vegetables, and fruit. Fish are very abundant in the Japanese waters, and form the sole animal food of the lower classes. Their vegetables are much the same kind that we have, but are said to be generally of inferior quality; one of their favorite vegetables is an enormous radish, the *diakon*, which is 2½ feet long, and 4 inches thick, and eaten raw or pickled; among the things which we do not have, are lily bulbs, and the young and tender sprouts of the bamboo. They have apples, pears, peaches, and other fruits such as we have, besides some which we can not grow. But the strangest thing about their fruits is, that they eat them, peaches, apples, grapes, and all, while they are yet green, hard, and sour. In this matter the whole nation is like some boys who will eat green apples, especially if they can get them on the sly. But the boys have not the excuse for eating green fruit that the Japanese have, or think they have. I have already stated that their principal food is rice, which answers them in the place of bread of all kinds, and they have a notion that the acid of the green fruit prevents any ill effects from so much rice.

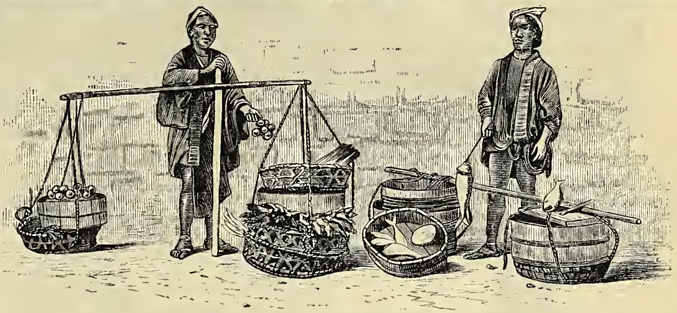
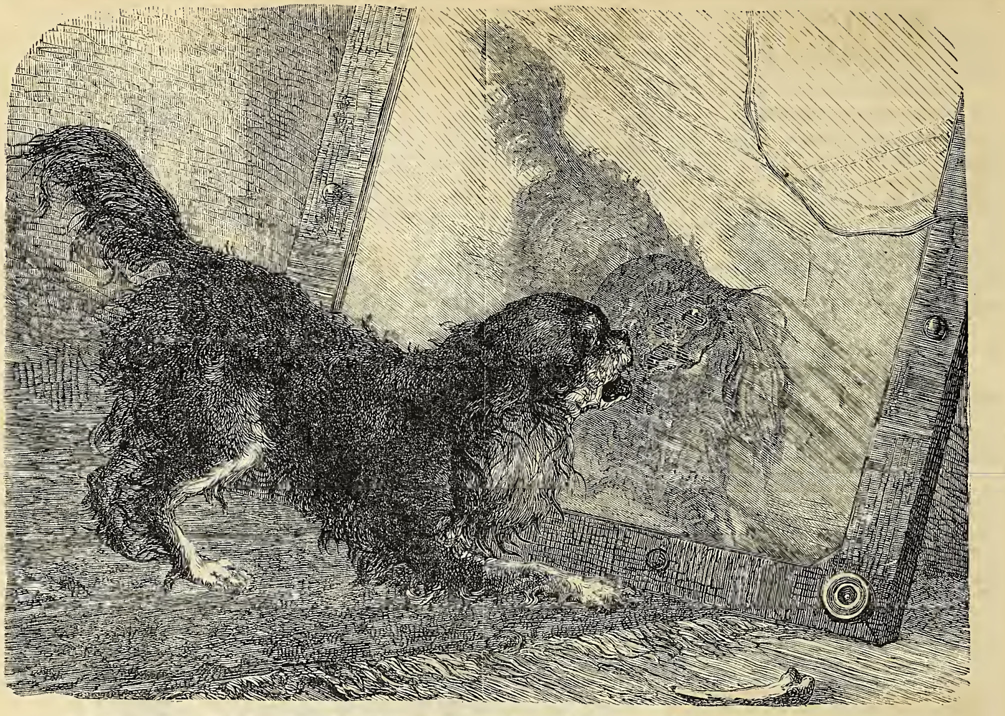


Fig. 1.—A STREET-SCENE IN JAPAN.—VENDERS OF FISH, VEGETABLES, AND FRUIT.

One picture (fig. 2 on next page) shows a Japanese fireman. The buildings in Japan are not often more than one story high, but as they are built of very light materials, they burn very readily, and when a fire breaks out in a large city, it often burns over a great share of it, before it is stopped. The firemen have very small engines, not larger than we sometimes see used for watering gardens, and their hose-pipes are made of bamboo. They have hooks and ladders too, but instead of carrying them on a truck drawn by horses, a man takes them on his shoulders. You would hardly guess him to be a fireman; he certainly looks very little like one of our "fire-laddies," who has more "go" in him than a whole regiment of such quiet-looking citizens as this. No wonder that in a city in which every building is a regular tinder-box, where the fire-engines are mere squirt-guns, and the firemen look more like scholars than like boys who "run with the machine," the merchants should try to preserve their goods from fire. This they do by building fire-proof ware-houses, and very droll houses they are. A framework of bamboo and timber is first built, and then plastered up with mud, to make a mud-shell at least a foot thick. The doors and shutters of the building are made of the same thickness, and also of sticks and mud. When a fire breaks out near by, the merchant puts all his valuables inside, shuts up every door and other opening; a paste of mud is quickly made, and this is plastered over every crack and cranny. The light buildings all around are burned, but these mud fire-proofs stand unharmed amid the ruins, and answer for the Japanese merchants quite as good a purpose as Herring's and other fire-proof safes do in our city fires.

The only other picture from these photographs, that I can make room for, is fig. 3 (see next page). After seeing such a strange-looking fireman, I think you will be puzzled to guess what may be the occupation of this gentleman. Well, he is—of all things in the world—a farmer! He is not now in his working dress, for that is peculiar in being nearly no dress at all; indeed, laborers of all kinds, even those who work in the streets of cities, go nearly naked. But this farmer has on his storm rig, and is prepared for bad weather. At work the farmer would probably have nothing on his head, but now he has on a sort of umbrella-like hat, to shed the rain, and the back of his head is also protected. But the funniest part of his out-fit is his cloak, his storm cloak, or water-proof. You will wonder what this cloak can be made of, and when I tell you that it is made of straw, you will wonder still more. But you must recollect that very generally in some European countries, and sometimes in this country, the roofs of barns and sheds, and even of the dwelling-houses, are covered with straw, are thatched, as it is called, and that such roofs, when properly made, are both tight and warm. The Japanese farmer's cloak is something like a thatched roof; it is made of a piece of cotton cloth, to which the straw is sewed, layer by layer, one layer overlapping that below it, in such a manner as to shed the rain, and though such a cloak can hardly be called handsome, it keeps the wearer both dry and warm —and that is all that the most costly garment can do. You will perhaps wonder what the farmer carries at his left side, and perhaps think it may be his style of scythe, or some other farming implement—not at all, it is only his sword. Formerly it was the custom for all men to carry swords, even the common people, when dressed up, carried one, while the nobility were distinguished by carrying two swords, one above the other, on the same side of the body. I say these were worn, because in the cities, where foreigners are numerous, these old customs are passing away, and the better classes generally dress in our style. Still, far back in the country, the old ways are followed up, and when the farmer is in full dress, he still carries his sword. There is one more thing about this farmer's wet-weather out-fit to be noticed—his foot-wear for wet weather. He has no rubber shoes, or even a pair of well greased cow-hide boots, to keep the mud and water from his feet, so he does the next best thing, which is to lift his feet above the wet soil, by putting on a pair of wooden clogs! Take the farmer as he is pictured, and he looks very little like our farmers. But their style of farming is as unlike ours as the dress of the farmers is different. We look upon 50 acres as a small farm, while in Japan, 10 acres is a large one; with us we do everything with horse-power and machinery that can be done with the help of these, but there all the work—from breaking up the soil to harvesting—is done by hand-power and hard work. I don't think that the great numbers of our boys and girls who live upon farms all over the country, would consider, as many do, their lot an unpleasant or a hard one, if they could know how much better off they are than farmers, not only in Japan, but in other parts of the world that regard themselves as more highly civilized.

THE DOCTOR.



HOW GYP WAS DECEIVED BY THE MIRROR.—*Engraved for the American Agriculturist.*

Such a rumpus! It was house-cleaning time, when everything was topsy-turvy. How is it that people can't clean house without making such a fuss about it? It was full noon, and by this time our own Biddy, and a woman hired for "house-cleaning," had succeeded in getting things into a lovely state. There were some of the kitchen things in the parlor, and, of course, some of the parlor things in the kitchen, while others were placed in the hall, so as to be as much in the way as possible. Well, things were pretty thoroughly mixed, when there was such a rumpus! The dog, Gyp, barked as if he were several dogs, and he tore around as if he had gone mad over the confusion. We all rushed to the hall, for there was where the trouble seemed to be, to see what was the matter, and the whole thing was so funny, that even Biddy forgot to be cross, and actually laughed, and for Biddy to laugh at house-cleaning time, was something before unknown; for several days before, she begins to be serious, and by the time the day comes, she is in "a state of mind," but now Biddy had a good hearty laugh! and what was more, she had several little laughs to herself, during the rest of the day, just at thinking of it. You will wonder what it could be that would make Biddy lose her solemn face on house-cleaning day. This is the way it was: Gyp was always fed at noon, as regularly as the time came. Seeing all the confusion, and no signs of his dinner, he hunted for himself, and having found a bone, went to the hall, as that seemed to be the quietest place, to enjoy it. In setting things where they shouldn't be, a large mirror was stood on the floor of the hall, and, of course, with the glass outward. Gyp came along with his bone, and behold, there was another dog with another bone; this would never do, so Gyp, probably thinking that no other dog besides himself had a right to a bone in this house, laid down his own to capture the bone from the other dog. But the other dog put his bone down, Gyp could see it, and was going for it, but there he came face to face with the other dog. Gyp is just a bit of a coward, and when he saw the other dog coming towards him, he started back, and jumped and barked in a way that we never supposed possible. When we came he was so busy in going towards and retreating from the strange dog, turning this way and that, but all the time keeping at a safe distance, that he did not notice us at first; but the sight of the bewildered animal, now threatening and now backing away from his own shadow, was one of the funniest sights I ever saw. At last we laughed so loudly that Gyp noticed us, and looked as if he would like help. He still had his eyes fixed on the other bone, as if he was still determined to have it. So to help him I moved the mirror out from the wall; he was sure of his bone now, and he came behind the glass with a bounce, ready to pick it up. Such a change in that dog, when he found there was nothing there! He evidently felt that he had been imposed upon, and started out with a dismal whine, even forgetting his own bone. Gyp has evidently been troubled in his mind; he can't make it out, and now that the glass is hung, we have only to call the dog's attention, and touch the mirror, when he will put on a most sheepish air, and want to get away from it. This was what made the rumpus.

SARAH J.

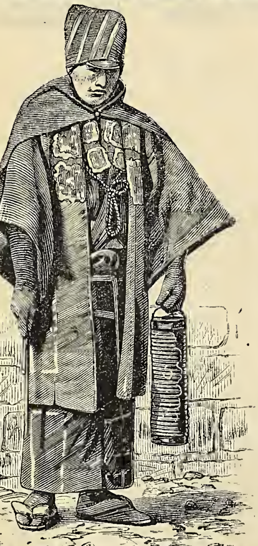


Fig. 2.—JAPANESE FIREMAN.—(*See page* 307.)

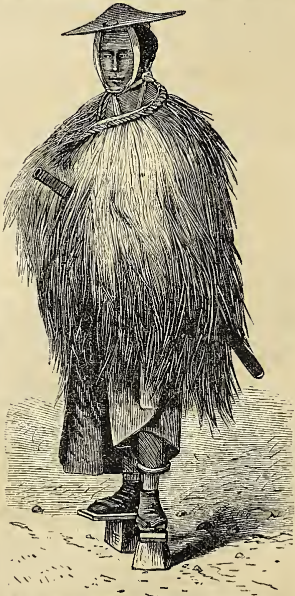


Fig. 3.—JAPANESE FARMER.—(*See page* 307.)

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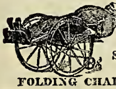

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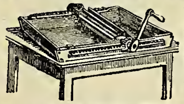

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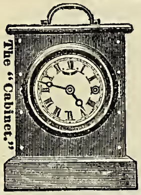
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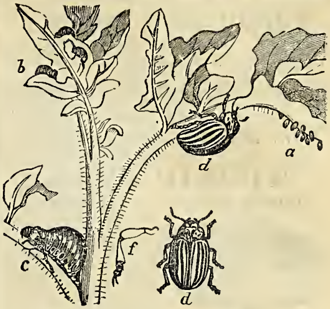

Potato Pests.

Being an Illustrated Account of the

Colorado Potato-beetle

AND THE OTHER

Insect Foes of the Potato IN NORTH AMERICA.

With Suggestions for their Repression and Methods for their Destruction.

BY

CHARLES V. RILEY, M. A., PH. D.

(STATE ENTOMOLOGIST OF MISSOURI.)

FINELY ILLUSTRATED.

TABLE OF CONTENTS.

THE COLORADO POTATO-BEETLE.

Its Past History.—The Insect's Native Home.—Rate at which it traveled.—How it traveled.—It spreads but does not travel in the Sense of leaving one District for another.—Area invaded by It.—Causes which limit its Spread.—How it affected the Price of Potatoes.—The Modification it has undergone.—Its Natural History.—Its Poisonous Qualities.—Its Food Plants.—The Beetle eats as well as the Larva.—Its Natural Enemies.—Remedies.—The Use of Paris Green.—Bogus Experiments.—Alarm about the Insect Abroad.—Nomenclature.—The Bogus Colorado Potato-beetle.

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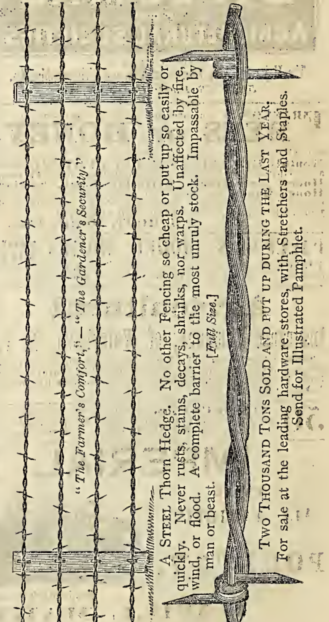

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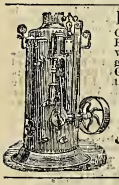

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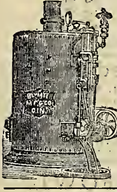
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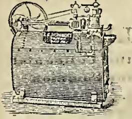

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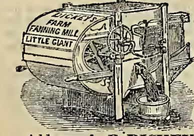

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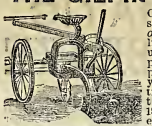

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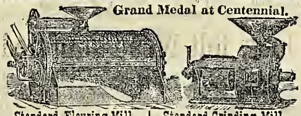

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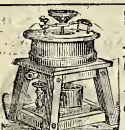

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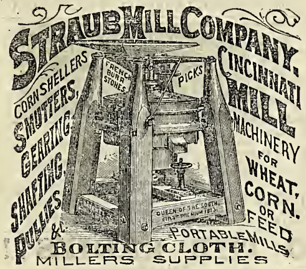
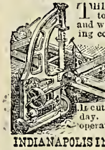


SAW MILL FOR THE PEOPLE.



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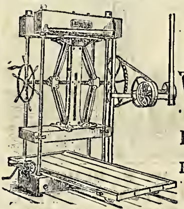

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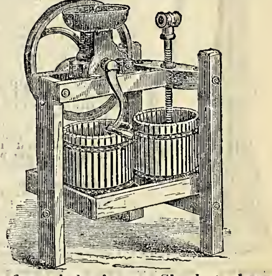

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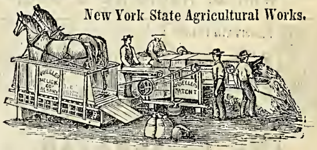

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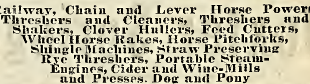
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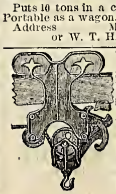

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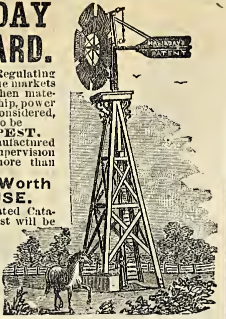

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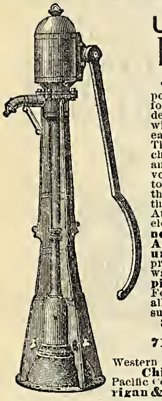

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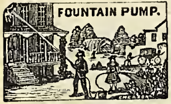
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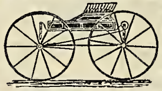

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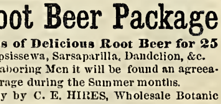

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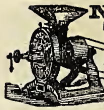

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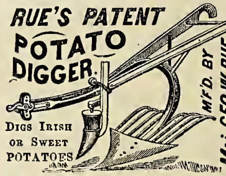

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OUR BASKET

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 289.

Training Shepherd Dogs.—"R. M. L.," Alexandria, Va. Shepherd dogs can only be trained by an experienced shepherd, along with a flock of sheep. The best shepherd dogs are brought up with the flock, and bred and raised by the shepherd. We believe that there are a few persons who make a business of rearing and training sheep-dogs, but unless they advertise, we can not learn where they are.

Dog-Powers for Churns.—F. S. Wood, Westminster, Mass. There are several good dog tread-powers made for use in churning, costing about $25.00. They are very useful adjuncts to the dairy, and may be operated by a dog, sheep, or calf. A heavy wether makes a very tractable motive power, and is more effective and profitable than a dog, because it is heavier; besides it yields a yearly fleece, and when done churning, gives a carcass of mutton.

A Horse that will not Back.—"J. G. S.," Derby, Conn. In training a horse, it should be taught to back, else when required to do this, it may not understand what is wanted. If it does not know how to back, it should be taught by first backing without a wagon, so that it will move backwards at the word. Then it may back an empty wagon, and gradually learn to back the heaviest loads. A well-trained horse is able to back as much or more than it can draw.

Machine for Harvesting Beans.—"J. T." Miami Co., Ohio. There is no machine made to harvest beans. This is a crop that will probably be harvested by hand for some time yet.

Cement for Drain-Tile.—"J. M. N.," Girard, Ill. The proper portion of sand to hydraulic cement for making drain-tile, is four parts of the first and one part of the latter. The sand should be coarse, sharp, and perfectly clean.

Potato Beetles and Flax.—A correspondent at Ashland, Ky., writes, that a number of gardeners at that place have tried sowing flax-seed between the rows of potatoes, and report it as the most successful method yet found, and that "the potato-bug leaves the vines without further ado." This comes from a highly respectable source, and we give it as it comes to us.

Quidding in a Horse.—"J. C. C.," Dodge Co., Wis. Quidding is the spitting out or dropping of the food, especially hay, after it has been chewed by a horse. This is caused generally by some soreness of the throat, which makes the horse averse to swallowing any bulky food. The horse should be examined, and inflamed patches at the root of the tongue and back part of the mouth looked for. There may also be soreness of the gullet, evinced by flinching on pressure of the throat at the upper part, or the glands may be swollen. In either of these cases, the parts, where they can be reached, may be dressed with a mixture of honey or molasses, one ounce, and finely powdered chlorate of potass, one dram. The mixture to be applied with a brush. Half an ounce of sulphite of soda may be given in the feed for a few nights.

Feed for Increase of Milk.—"S. W. W.," Long Branch, N. J. There is no better feed to induce a large flow of milk than wheat bran, or wheat middlings. This should be scalded, and made into a thin gruel, and given as a drink. A handful of salt should be put into each pailful. Buckwheat, ground with bran and oats, makes a rich feed, and is productive of milk, but if butter is made, neither the quality nor the color is good.

Smut in Wheat.—"T. K. M.," Mercer Co., Va., asks, "What is the cause of smut in wheat, and what is the remedy for it?"—The "cause" of smut is quite similar to the "cause" of wheat. In both cases you sow seeds, or what corresponds to seeds; in one instance wheat, and in the other a very minute plant that lives upon the wheat, is the result. The diseases of grain known as smut, rust, mildew, and in England as bunt and brand, are due to minute fungi, of several species, which, while they have very little in appearance in common with ordinary plants, are yet well recognized members of the vegetable kingdom, though of only microscopic size. These plants are multiplied by little germs, so to speak, of exceeding fineness, each grain of which is capable of performing the office of a seed and multiplying the kind of fungus. These reproductive grains, or *spores,* are so minute as to readily escape observation, and one may sow enough with his seed-wheat to stock his field with the pest, without noticing their presence. The most common method of introducing either of these fungi is with the seed, and it is a safe precaution to destroy such spores as may be adhering to the wheat to be sown One method is, to give the seed two or three successive washings in strong brine, and to dry with air-slaked lime. Another is, to make a strong solution of Blue Vitriol, or Blue-stone, (Sulphate of Copper), about 2 lbs. to the gallon of water. Sprinkle the wheat with this, stirring so as to coat every grain completely with the liquid, and then spread it where it will dry quickly.

Polled Angus Cattle.—"J. C. T.," Mercer Co., Pa. The only herd of polled Angus Cattle we know of in the United States, is that of Mr. George Grant, of Victoria, Kansas.

Hay and Grain Caps. — "A Young Farmer," Hart, Mich. The best hay caps we have used were squares of 40 inches wide sheeting of the coarsest and heaviest kind. Oiling is not advisable. It tends to rot the cloth, instead of preserving it, and causes it to crack where it is folded. The unbleached cloth will turn a steady rain for 24 hours, if the cap is not permitted to have a hollow in the top.

Size of Concrete Walls.—"S.," St. Charles, Mich. The basement walls for a three-story concrete house, should be 16 inches thick, the upper walls may be 12 inches.

Distemper in Horses.—"L. Z.," Otis, Ind. The disease known as distemper, is one to which all horses, at some time or other, are subject, but generally while they are young. It is an eruptive fever in character, something like the measles in the human race. Its chief symptom is a swelling of the soft parts between the branches of the lower jaw, and the salivary glands, sometimes forming abscesses, accompanied with some fever, and soreness of the throat. It is best treated by good nursing, and no medicine; giving them oatmeal or linseed-meal gruel as the only food or drink, and, if the fever is high, two or three drams of Saltpeter may be dissolved in the gruel once a day. The disease is properly called "straugles." If the swellings appear so large as to threaten suffocation, they may be opened with a lancet, or treated with the ointment of Cantharides or Spanish flies. Law's "Farmers' Veterinary Adviser" is an excellent book on diseases of horses and cattle.

Saddler's Wax.—"Vandalia." Saddler's wax is made by melting common black pitch with enough tallow to soften it, so that it will work easily. Shoemakers' wax is made in the same manner.

Clovers.—T. Lee, British Columbia. The specimen appears to be only a vigorous form of the Red Clover—*Trifolium pratense.* Some varieties appear to be only biennial, while other forms are perennials of short duration, lasting three or four years, much depending upon whether it is allowed to go to seed or not. If you are anxious to repay the favor you think you have received, do a good-natured thing to the next person who needs it, and keep the account running...."F. W. C.," Mars Bluff, S. C. Buffalo Clover, *Trifolium reflexum*, a native species, which is an annual, or, at most, biennial. Its agricultural value not tested.

Blue Grass not a Curse.—Some months ago we gave an item from a correspondent in Wash. Ter. who wished to know how to get rid of Blue Grass, which he regarded as a great curse. As this grass is usually welcomed and valued, we supposed he must be mistaken in the identity of the plant, and called something besides *Poa pratensis* by that name. Since then we received a specimen from Fred. F. Lane, living in another part of the territory, which shows the species generally known as Blue Grass to be abundant there, but Mr. L. looks upon it "as far removed from a curse."

Nitrate of Soda on Potatoes.—"G. R.," in the "N. E. Farmer," says on the advice of this journal, he bought 300 lbs. nitrate of soda for potatoes, an ounce to the hill. He says: "We furrowed *deep,* dropped the nitrate, covered it, and then dropped and covered the potatoes. Result—about one-fifth of the potatoes never came up, and many that did looked as if they had a hard struggle for life."—The conclusion jumped at is not warranted. If the nitrate was sufficiently spread and covered with two inches or more of soil, it could not injure the potatoes, and the effect must be good, judging from very large and wide extended experience. If dropped in a mass, and slightly covered, it may have had a slightly injurious effect. Wet weather, or deep planting, or both, may have been the trouble in this case, if the nitrate was not placed, in a mass, too near the seed. It is always well to take into account all the circumstances, in arriving at conclusions.

We Could'nt Attend.—Mr. and Mrs. M. kindly sent us an invitation to attend a "Barn Party" to be held at a farm with a very pretty name. But as town, county, and even State were omitted, we could neither attend nor send our "regrets."

Pleasure and Business, are combined in a rather unusual manner by a nursery firm in Tennessee, who invited their friends to participate "in the festivities of an old-fashioned Fourth of July Revival" at their nurseries on the 4th. The barbacue was promised to be the best that "the country could afford," while there was music, and of course speeches, and remarkable speeches, too, "from speakers who are always original and never dull, in short, a literal feast of reason and flow of soul"—a remark which, if we mistake not, has been made once or twice before. But more than that, there was "an interesting horticultural exhibition thrown in." Certainly a most taking programme.

"Gardener," and Many Others.—We have frequently stated that we do not reply to purely personal questions—such as are of no interest to any other person—in the paper; we have also tried to make the fact generally known, if repetition will do it, that we do not notice letters that lack the name of the writer. We again present these two points not only to "Gardener," but to many others, who expect us to occupy space with answers that would be of use to themselves only—and to many more who, for some reason, think an editor will waste his time with nameless correspondence. Had "Gardener" enclosed a Postal Card with his name upon it, he would have had an answer the next day.

The Texas State Fair.—The Capital State Fair Association is to be commended, as it sent out its announcement in April to the effect that the third Annual Fair will be held at Austin, Travis Co., on the 2nd Tuesday in October, and continue for five days. E. C. Bartholomew, Austin, Tex., is Secretary, from whom premium lists and information may be obtained.

A Question of Irrigation.—"J. P. L.," La Platte Co., Col. The proper condition of moisture in a soil for plowing, is when it will easily fall apart when pressed into a ball in the hand. If it sticks, or is pasty, the soil is too wet. If there is little time to plow in the spring after frost has disappeared, we would suggest that the ground be thoroughly irrigated in the fall or in spring, when it can be plowed early and be ready to sow very quickly when the time comes. Many such questions as these are considered in a new work on irrigation, entitled "Irrigation for the Farm, Garden, and Orchard," by Henry Stewart, and published by the Orange Judd Co., price $1.50.

The Best Time to Cut Timber for Rails.—"J. W. W.," Gilmore Mills, Va. We would prefer to cut timber for fence posts and rails, or boards, in August; then let the trees lie until the foliage has dried, by which time the timber will have lost the most of the sap, and split or saw up the logs before the timber becomes frozen.

Boats with Smooth Sides.—"H. H. B.," Chappaqua, N. Y. Instead of making the sides of a boat with lapped streaks, the streaks may be jointed either by beveling the edges to make a joint, or by rabbeting them. In either case the sides would be smooth. In making the ends of lap-streaks, the edges of the boards are beveled off so as to bring the ends smoothly together on the stem and stern. A boat 12 ft. long and 3 ft. beam may be about 18 or 20 inches wide at the stern.

Farm Engines.—"C. H. S.," Fond du Lac Co., Wis. It would not only be convenient but profitable for two neighbors to own a portable-farm steam engine for thrashing and grinding. An engine could do the work of four or five farmers, and the expense might be thus divided between them. Co-operation of this kind might be easily carried out very extensively amongst neighbors, who could, in this way, jointly own male live stock for breeding purposes, reapers, thrashing-machines, feed-mills, and other costly machinery.

The American Pomological Society.—Every fruit grower should recollect, and arrange to be present at the Sixteenth Meeting of the Society at Baltimore, on Wednesday, Sept. 12th. Thos. P. James, Cambridge, Mass., is Treasurer. Sending him $4 constitutes one a member, and entitles him to the volume of Proceedings. Fruit for exhibition is to be sent to the Society, care of Wm. B. Sands, Baltimore, Md.

The Scientifics.—The Society which rejoices in its full name of "The American Association for the Advancement of Science"—a name which its members rarely use without some how abbreviating it—will hold its 26th meeting at Nashville, Tenn., on the 29th of the present month, (Aug.) The most important office, that of Permanent Secretary, is filled by F. W. Putnam, of Salem, Mass., who gives all needed information, etc. These meetings are usually most enjoyable, and there is not so strict an attention to business as to prevent the doing of proper justice to the various entertainments and excursions made and provided.

Trow's New York City Directory.—Directories belong to a style of literature, not much valued for evening reading, yet very useful at times. The Directory of a city like New York forms an ample volume, and to issue a yearly edition, completely revised, and including all the additions and changes, requires a small army of helpers, while the one who directs them must exercise no little generalship. The volume for the present year is now the 91st issue, and though every now and then competing directories are started, the shortness of their lives shows that the citizens of New York are too well satisfied with the accuracy and usefulness of Trow's to want any other.

Not Exactly a Clover.—"E. A. A.," Chambersville, Ark. The specimen is *Medicago denticulata.* The Medicks are nearly related to the Clovers, but differ, among other things, in having a twisted pod. Lucern, or Alfalfa, is a perennial species of *Medicago* (*M. sativa*). Yours is an annual, and is highly esteemed in California, where it is extensively naturalized, and goes by the name of "Burr Clover."

Mignonette and Bees.—"E. D. K.," Texas. Mignonette is classed as one of the honey-yielding plants, but experienced bee-keepers are doubtful if any such plants may be grown with profit solely for the purpose of supplying honey. White clover, which yields the finest of all, and buckwheat, which yields so abundantly, are cultivated for other uses, and the honey obtained from them is clear gain; but it becomes another matter when land and labor are devoted to a plant from which the sole return will be honey. The seeds of Mignonettes and the other plants named, may be had at wholesale of any of our importing seed houses. Prickly Comfrey seed has not as yet been offered by our dealers —only the sets or root-cuttings.

The Wisconsin Horticultural Society.—A neat volume, sent by the Secretary, F. W. Case, contains the doings of last year and of the annual meeting in Feb., 1877. A noticeable feature of this report is the number of contributions by ladies, no less than eight of the papers read at the annual meeting being by them. While some of the papers and discussions are of local interest, others are useful to horticulturists generally, and we congratulate the Society upon the healthful activity to which this volume bears witness.

Reduction of Bone with Acid or Soda.—"O. W. F.," Worcester Co., Mass. When bone is treated with sulphuric acid, (oil of vitriol,) the phosphate of lime of the bone is changed into a superphosphate, which is a combination of lime with twice as much soluble phosphoric acid as in the simple phosphate. When soda is used to reduce the bone, the equivalent of phosphoric acid in the bone phosphate is not changed. The superphosphate is more active, but not so lasting as the simple bone phosphate.

Sheep Growing for Profit.—A Reader, Chicago. The localities which have proved most favorable for sheep raising, are doubtless in that region covered by Western Kansas, particularly in the Arkansas Valley and Southern Nebraska, where the valley of the Platte offers an excellent field for shepherds. Sheep keeping is rapidly increasing in the localities mentioned. Stewart's Shepherd's Manual, price $1.50, contains full instructions and information on the choosing, rearing, and management of sheep.

Milking Tubes.—In giving an engraving of Pilling's Milking Tubes in the *American Agriculturist* of November, the slide was shown with the broad part downwards. In using these tubes, the broad part, which is a sliding shield, to prevent the tube from being inserted too far, should have the broad flange upwards. There is then nothing to hinder the easy and safe insertion of the tube into the teat. These tubes are very useful in case of garget of the udder, when milking is difficult or impossible without them.

Onions and Oranges.—The "Florida New Yorker," is a monthly journal, edited by Col. J. B. Oliver, and published at 21 Park Row, N. Y. It is especially devoted to setting forth the claims of Florida as a home for those who seek a mild climate, and always contains much that is of interest to those looking for information about the State. We learn from its last issue that onions have been found so profitable a crop, that parties are intending to cultivate them largely, and expect to become competitors in the trade now entirely in the hands of Bermuda growers. It is estimated that the onion is not only much more profitable than any other vegetable, but that it is "infinitely more remunerative" than oranges. The seed is sown in October, salt and ashes being the fertilizer used by some growers.

An Example.—A postal card from Va. reads: "Do you know of a firm in —— —— Co., N. Y., called ——. They offer great inducements in the shape of—— ——. Are they reliable? By answering the above in your paper, you will oblige a subscriber. W. A."—We give this as an example of dozens, if not hundreds, of similar questions, and to show our readers that it is exactly the kind that we can not reply to in the paper. Had W. A. left his signature in a legible condition, we should have dropped him a postal card, saying that we never before heard of the firm, but a line through his name prevents doing this. In any case, the request to "reply in the paper," is one that we can not comply with, as it is of interest to "W. A." only. Had we happened to know that the concern was a reliable one, we should not advertise them as such in this portion of the paper. We wish our friends would remember that such purely personal matters can not be answered in the *American Agriculturist*. We need much more space than we can find for replies of general interest, and this reason, if no other, would exclude them. But were it not for this, the fact that they are not matters proper for publication under any circumstances, would prompt us to take the same course. When we are able to answer such inquiries, we cheerfully do so, at once, provided we have the full address of the writer.

Goats and Goat's Hair.—"G. L. S.," Kendall Co., Texas. There is a market for goats' pelts in New York, Boston, Philadelphia, and Baltimore, where they are largely used in the tanneries. There is only a restricted market for goat's hair as yet, but it is quite probable that the use for this material will increase as the supply becomes larger and steadier. There is no book on the goat published in this country, but an English work, "The Book of the Goat," could be procured for $1.50. This gives information as to breeding, feeding, and rearing these animals.

Fertilizer for Potatoes.—"L. T. R.," St. Louis. It is impossible to say what is the best fertilizer for potatoes under all circumstances. The kind of soil has much to do with the choice. Upon heavy clay soil, barn-yard manure would undoubtedly be equal to any, but after some years of experimenting upon lighter soils, we find the best results, in every way, are gained from mineral fertilizers, such as superphosphate of lime and muriate of potash, or both mixed. The present season our best crop of potatoes is grown with the potato fertilizer of Bowker & Co., of Boston, prepared from the formula of Prof. Stockbridge. The portion of the crop manured with this fertilizer, (400 lbs. to the acre,) is better than that treated with good barn-yard manure.

Crevecœur Fowls.—"F. W. S.," Saratoga Co., N. Y. The Crevecœur fowls can be procured of the Fancier's Agency, Courtland St., New York. They are scarce birds.

Orchard Grass Seed.—"H. T. C.," Woodstock, Conn. Orchard grass ripens its seed in June, and should be cut when the seed is easily shelled by rubbing a head between the hands. It can be cut as any other hay, and thrashed either with the machine, the flail, or by laying a thick bed on the barn-floor, and driving a pair of horses over it. This last plan, although a very old one, is very cheap and effective, and there are times and places, when such rough methods may be used.

Fretting for a Farm.—"F. C. L.," St. Louis, Mo. We can not procure situations on farms for those who want them. These are difficult or impossible to procure, for the same reason that other situations are scarce. There are more laborers than places for them. Besides it is not so easy for a man that has been used to other business, to succeed at farming. The time is past when a man could hew a farm out of the woods with an axe, and cultivate it with a hoe. Social conditions have changed, and people now would think this intolerable. Hence our wood-land is remaining unsettled, and people go to the prairies, where the land is already cleared, and a farm is made without so much labor. We do not advise persons to leave a business in which they are successfully engaged, to enter into farming, merely because they have a hankering after a country life, or the passion for change grows strong upon them. "Let well enough alone." There is no life harder, or subject to more barrassing troubles and "botherations," than that of a farmer, who is industrious, and ordinarily fretful.

A Liniment for Beast (and Men).—"J. C. Y.," Tazewell Co., Ill. The basis of the liniments in general use is alcohol, turpentine, and some of the essential oils. In many of these the stimulating properties of the alcohol, or the turpentine, are doubtless frequently more effective, than those of the various added ingredients. In some experience around oil wells the writer found the crude petroleum very useful in cases, in which liniments are generally employed, and since then has always kept a supply about the stable. We have also used a preparation of the crude petroleum, made expressly for use in stables, by E. F. Houghton & Co., of Philadelphia. It is called Cosmoline, and is an effective application for galls, wounds, and such eruptive sores, as "grease in the heels."

Tobacco Culture.—"F. S. H.," Sterling, Kas. All the information about tobacco growing that can be gained from books, can be learned from a small book published by the Orange Judd Co., and will be sent by mail for 25 cents. The headquarters of the Western tobacco business is at St. Louis.

Feeding German Millet to Cows.—"F.," Ennis, Texas. Millet should be cut up in a fodder cutter, wetted and sprinkled with wheat bran, shorts, corn-meal, or cotton-seed meal, and a handful of salt for each cow, and fed. It will be consumed without waste.

Keeping Butter in Hot Climates.—"W. E. F.," Ennis, Texas. There is no way in which butter can be kept in warm climates without ice. All the milk coolers are managed with ice. A new system of setting milk, known as the Cooley system, is described in a small pamphlet by the Vermont Farm Machine Co., Bellows Falls, Vt. If ice can be procured, this method would be very valuable in Texas, as the cream can all be raised in six hours, or less.

Cancerous Growths in a Bull.—"P.," Thomastown, Conn. The so-called "warts" which you describe as being as large as a hen's egg, rough on the surface, soft, moist, bleeding, and foully smelling, are not warts, but cancers. They show a bad constitutional condition; the bull is unsound, and should not be used for breeding. They may be touched with pure carbolic acid and cauterized, and if there were but a few, they might be removed with the knife. When in large number, this operation would be too severe. At any rate, if repressed in one place, they would appear in another. The animal, so far as can be judged from your description of its condition, is practically worthless.

"Sacrifice of Sheep" in California.—Much unnecessary commiseration and surprise are manifested in various quarters, at what is called the enormous sacrifice of sheep in California. Whole flocks, numbering thousands, have gone to the kettle, to be boiled down into tallow. This fate is considered pitiable, and as a great loss. On the contrary, where sheep are kept for wool alone, and mutton has no sale, this is the usual end of the sheep. When past the profitable age for shearing, it renders up itself for tallow. In Australia millions of sheep are yearly thus disposed of, and sheep-growers have become wealthy in the business. The chief end of sheep-keeping is profit, and there is profit in boiling down an old ewe or ram for its fat; this, and the pelt, realize a handsome profit. The kettles necessary for this operation, are of immense size, holding several hundred sheep at one time. After the fat has been skimmed from the kettles, the flesh and bones are fed to hogs, so that there is no waste; the long boiling softens the bone, so that they are easily crushed. The pelts are salted, and packed for shipment to a market for tanning.

Cure for Spavin.—"P. T. J.," Philadelphia. Spavin is a disease which may sometimes be cured, by the treatment exactly proper in each peculiar case, or all treatment may fail. Sometimes blistering is called for, and sometimes it is improper. There are different kinds of spavin. Bog or blood-spavin may be cured by cold dressing and rest, but it will generally recur on a return to work. Bone-spavin results in an alteration of the structure of the bone, and this form is frequently incurable. In the case of a valuable horse, the services of a competent veterinary surgeon should be procured.

Cotton Seed as a Fertilizer.—"W. S.," Montgomery, Ala. The hulls of cotton seed contain in their ash, which is about 7 per cent of the dry hulls, 23.72 per cent of potash, and 7.88 per cent of phosphoric acid. The whole seed gives 4 per cent of ash, and the ash contains from 27 to 36 per cent of potash, and 36 per cent of phosphoric acid. Cotton seed, freed from the oil and husk, contains 7 per cent of nitrogen, 2 per cent of potash, and 3 per cent of phosphoric acid. The whole seed contains 3½ to 4 per cent of nitrogen. It is worth as a fertilizer from $25 to $40 a ton. Guano is worth about $60 a ton at the place of import. Cotton seed should be composted with earth, and when used as a fertilizer, should be kept as near the root of the plant as possible. It should therefore be well mixed with the surface soil for about three or four inches in depth. To harrow it into the ground would be the most effective method of using it.

Charcoal—Burned Bones.—"J. J. H." Charcoal is entirely useless as a fertilizer. Burned bones are nearly all phosphate of lime and valuable. Wood ashes benefit land always and everywhere.

Regarding Clover Seed.—"W. J. V.," Kent Co., Md. To decide if it is most profitable to save the clover for seed, or to turn it down as a fertilizer, the question of comparative value should be considered. If the soil is good, and a fair crop of seed can be expected, it will certainly pay better to harvest the seed, and buy fertilizers with part of the proceeds. If the soil is poor, the crop of seed might be worth much less than the value of the clover plowed under. Every case must be judged by its own circumstances. Generally, if there is any prospect of seed, it may be most profitable to save it, as clover seed always bears a very high and profitable price.

"Big-Head"—Disease of the Bone of the Head.—"J. H. N.," Clay Co., Neb. This disease, (*Osteoporosis*), is incurable. It is an ulceration and decay of the bone which result in its gradual destruction. The final result may be protracted by occasionally injecting a weak carbolic acid, four grains of crystallized acid in one ounce of water, into the opening.

Be Careful with Artificial Fertilizers.—It is necessary to exercise care in the use of artificial fertilizers, most of which are poisonous, if taken in any considerable quantity. Cases frequently occur, in which cows, sheep, or calves, pasturing upon a meadow which had been recently dressed with nitrate of soda, have been fatally poisoned; poultry have picked up scattered grains of muriate of potash; horses have licked bags of other chemical substances, and fertilizer bags, having been thrown into water to steep and cleanse, have poisoned the water, and caused the loss of valuable animals. As the use of these necessary fertilizers increases, it must be remembered, that most of them are poisonous to animals, and proper caution be therefore exercised.

Disease of the Blood.—"G. W. B.," Wayne Co., Tennessee. Eruptive diseases such as strangles, farcy, and grease, denote an impure condition of the blood. In all these cases the best treatment is, to give sulphite of soda, in half-ounce or one ounce doses, at discretion daily, or every two or three days, according to circumstances. This should be given in the food at night and continued for two or three weeks. In the mean time the food should be nutritious and easily digestible. Corn should be given in great moderation; oats, barley, and bran, being the principal grain.

Windmills for Grinding Corn.—"L. W. W.," Lewes, Del. Wind-power may be very profitably applied to milling purposes under certain circumstances, as in localities where the sweep of the wind is not obstructed by hills or woods, and where water or other power would be less convenient or more costly. It is difficult to say which is the best wind-engine, as each of the standard patterns has some peculiar excellencies. It would be best to procure catalogues from the manufacturers who are mentioned in the *American Agriculturist* monthly, and choose from these that which will suit best.

Cement Concrete for Buildings.—"A Reader." Sandstone will make a very good material for a cement concrete. It should be broken into pieces from the size of an egg up to that of a pint bowl; angular fragments are to be preferred to round pieces. As it is almost as strong as solid stone, when well rammed down and thoroughly set, no blocks at the corners are needed; nevertheless they may be used if some square blocks that will bind well can be procured; round stone would be worse than none. A wall two feet thick, is strong enough for a large building. The proportions to be used are: one part of cement, four parts of sharp, coarse sand, and as much stone as will bed solidly, with the spaces between filled with the mortar. This is usually about 7 to 11 times as much stone as cement. There is no disagreeable smell about it. See *American Agriculturist* for December, 1874, for full particulars as to building cement houses.

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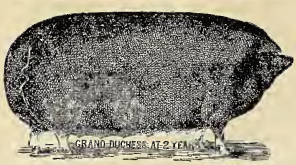

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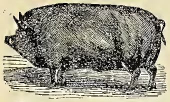

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For Preventing and Curing the Scab and all parasitic diseases of the Skin. Will destroy Lice, Tics, Fleas, &c.

Is beneficial to the general health and condition of the flock. The use of this **DIP** will cleanse and whiten the Fleece—also increased the growth or weight sufficient to be a full equivalent for the cost of the Compound.

This Preparation is Warranted to be **entirely harmless** and **free from all poisonous** Compounds, and will positively do all that we claim for it. Put up in packages of 1, 5, 10, 50, 100, and 200 pounds.

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Certain Death to the Screw Worm or Grub.

It not only destroys the worms, but cleanses and quickly heals up the offensive sores made by it.

No fly will attack a wound to which this preparation has been applied. Sheep which rarely recover from the attack of the worm under the ordinary treatment, are quickly cured by this application. In solution, this ointment will be found invaluable for healing Saddle Galls, and all abrasions of the skin of animals.

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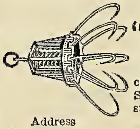

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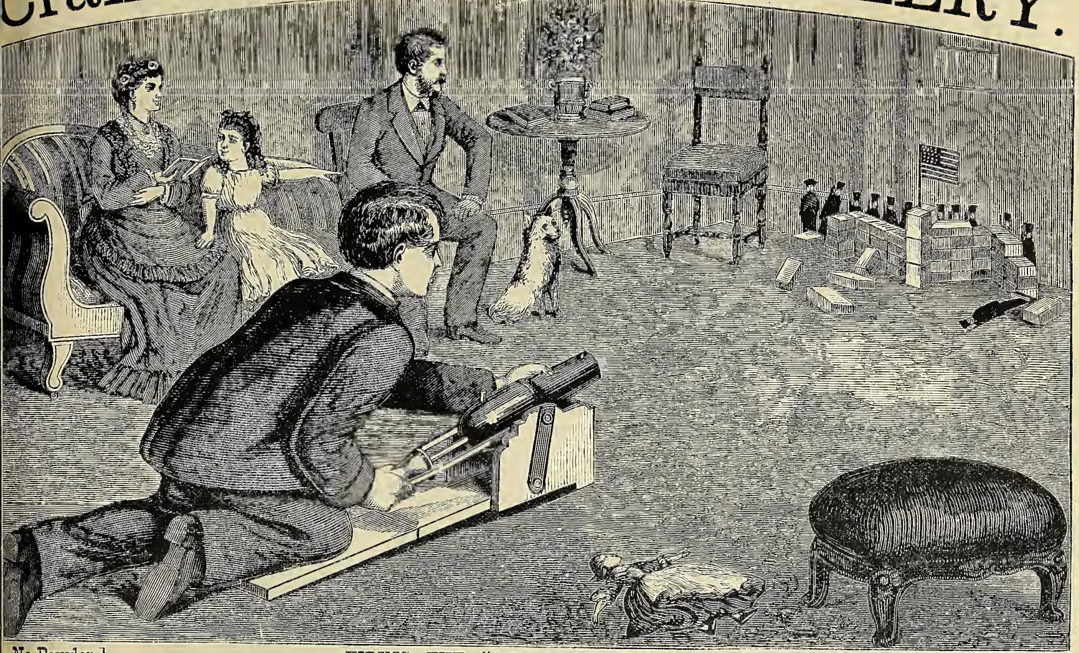

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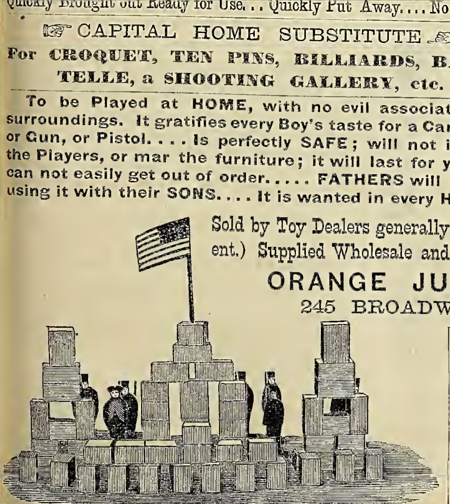

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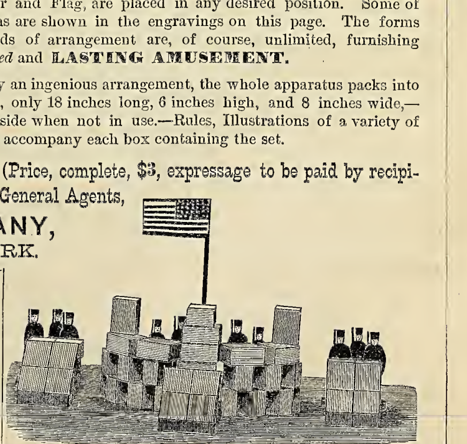

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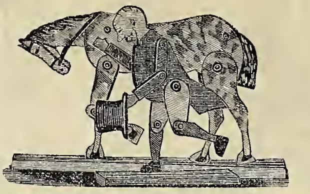

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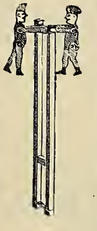

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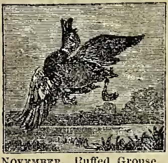

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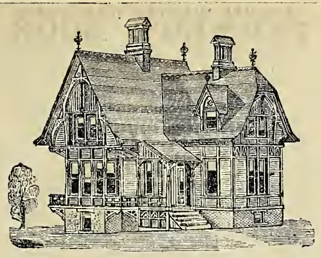

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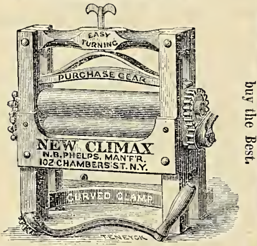

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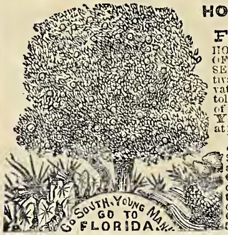

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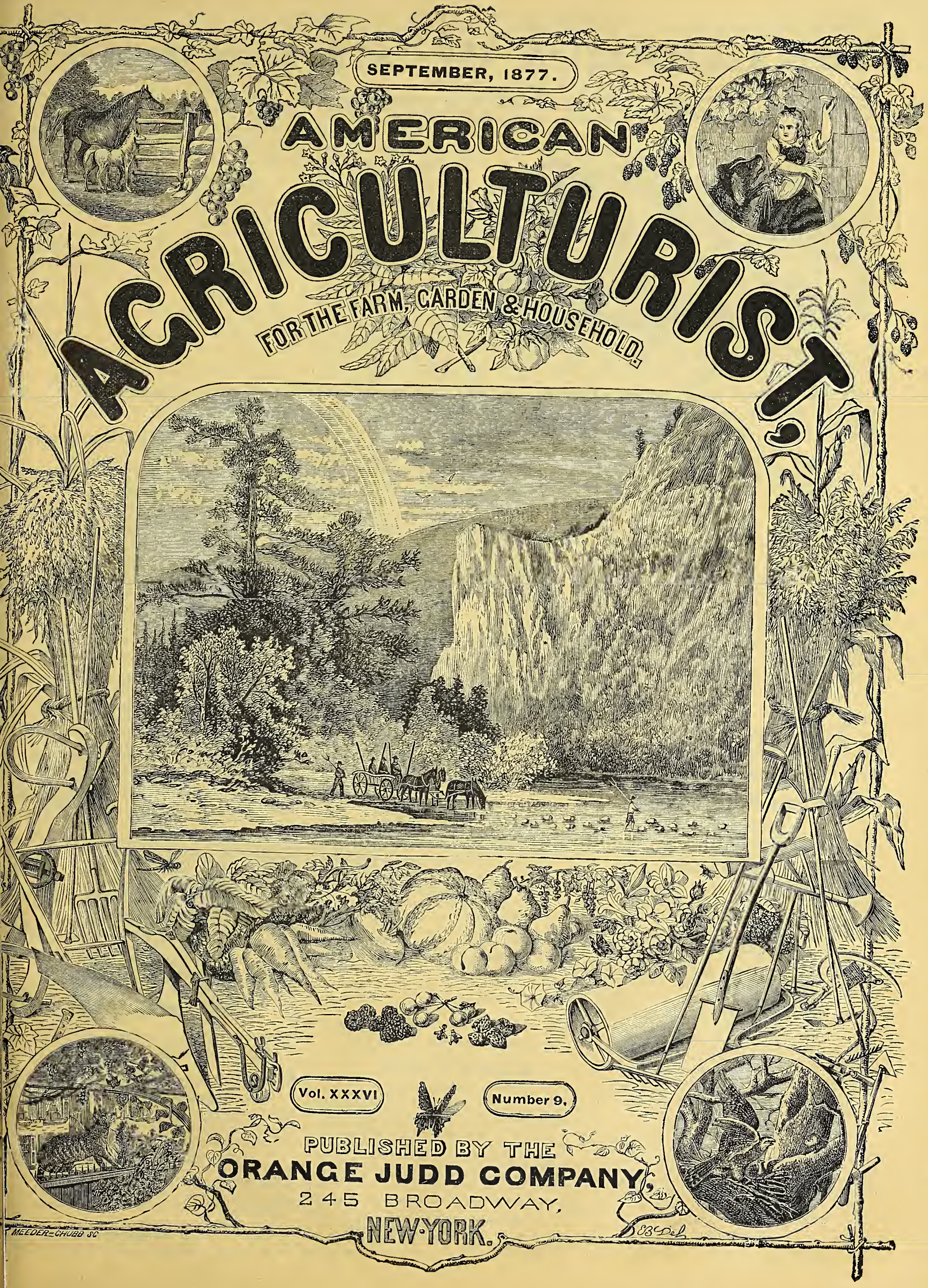
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AMERICAN AGRICULTURIST,

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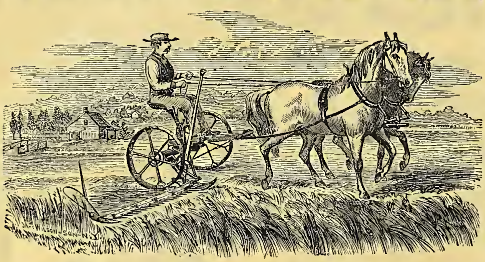

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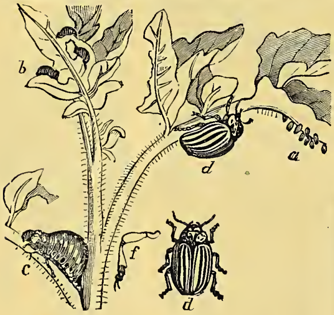

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Colorado Potato-beetle

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With Suggestions for their Repression and Methods for their Destruction.

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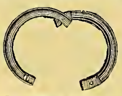

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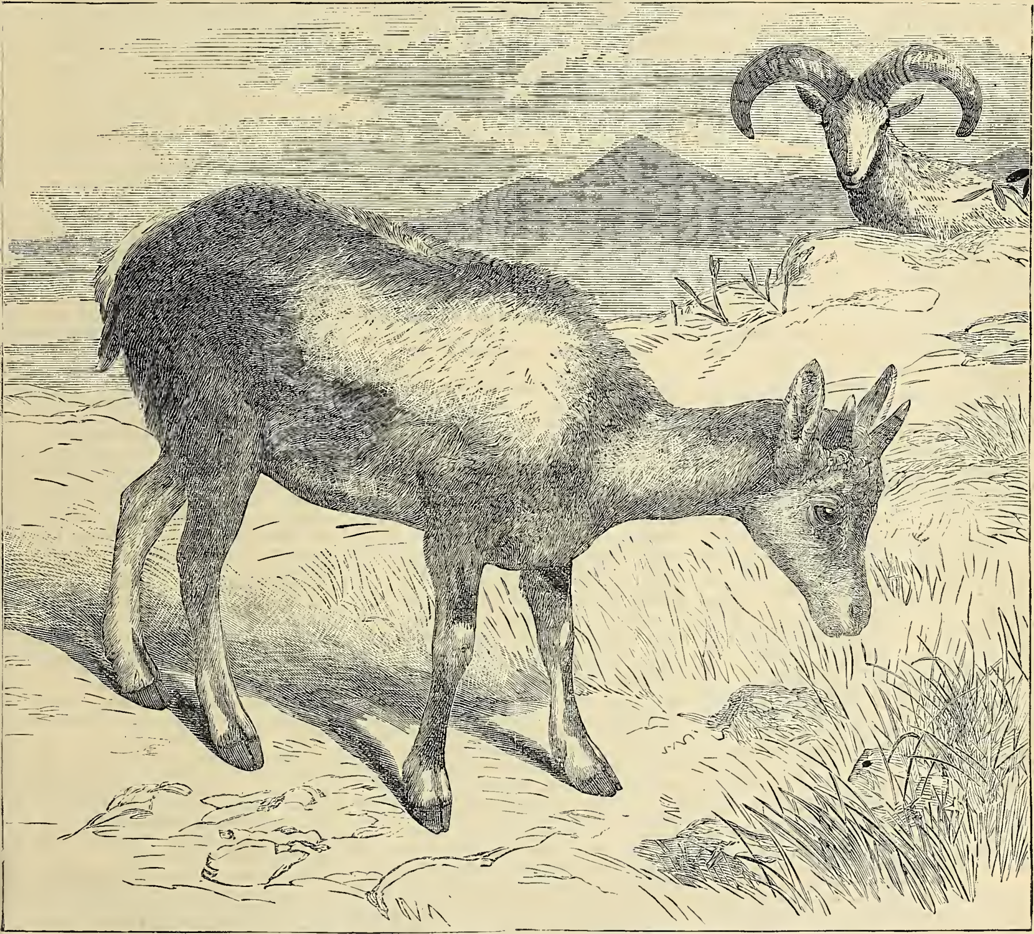

THE WILD SHEEP OF THIBET.—*Drawn and Engraved for the American Agriculturist.*

The head of the male sheep shown in the upper part of the above engraving, will very forcibly recall the head of our American "Big-horn," or Rocky Mountain Sheep. The species of sheep here illustrated, is a resident of Thibet, in Asia, and finds its home amid the precipices and peaks of the Himalaya Mountains. Its habits, in many respects, are not unlike those of our American wild sheep, and it affords an interesting instance of the natural adaptation of animal life to its surroundings and necessities, which has, in these widely separated localities, helped to produce animals of such similar form and peculiarities. To those who are acquainted with the habits of our Rocky Mountain Sheep, the following description of its Asiatic congener will seem familiar. This species is found upon the great snowy range of the Himalayas, in which the Ganges River finds its source, at very great elevations, from the highest limits of vegetation, down to the upper boundaries of the forests. It prefers the grassy slopes of these highest regions, and associates in flocks of four or five up to a hundred. It is a timid animal, ever on the watch, one of the flock keeping on the look-out for danger, and giving a shrill whistle of alarm on the appearance of an enemy. When upon rocky ground, it exhibits great agility in leaping from crag to crag of the wildest and seemingly most inaccessible precipices, and thus furnishes attractive sport to those hunters who delight in more than usually perilous adventure. In winter when snowed in beneath some sheltering cliff, it endures great privation, and when released from confinement, coming out wretchedly poor and emaciated, yet as agile as ever. The specimen shown in the foreground, is a female now living in the London Zoölogical Gardens, Regent's Park, where it was received about a year ago. We are indebted to the "London Field" for the excellent and accurate original of our illustration.

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Monthly Bulletin of the American Jersey Cattle Club.—We have received the first number of the A. J. C. C. Monthly Bulletin, which contains pedigrees of 52 bulls and 99 cows, and some short articles of special interest to breeders of Jerseys. This publication is to be issued monthly, under the supervision of Geo. E. Waring, Jr., Newport, R. I., Secretary of the American Jersey Cattle Club.

Deep Plowing of New Prairie.—"Winona," Minn. When prairie sod is plowed deeply, there are many roots of wild plants not cut off, but merely turned over. These sprout and grow again. The sod also does not rot so soon as when a thin furrow is turned over. But if the sod could be plowed with a double, or "jointer" plow;—a plow with one share and mold-board in advance of the other, so as to turn the sod the first, and then cover it with soil with the second one, grain might be sown at once. This might do for oats or buckwheat, but for wheat it would be risky.

Calendar for September.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1	S	5 25	6 34	11 0	5 27	6 32	11 08	5 29	6 30	11 15
2	S	5 26	6 32	morn	5 28	6 31	morn	5 30	6 29	morn
3	M	5 28	6 31	0 8	5 29	6 29	0 17	5 31	6 27	0 23
4	T	5 29	6 29	1 26	5 30	6 28	1 32	5 32	6 26	1 37
5	W	5 30	6 27	2 48	5 31	6 26	2 53	5 33	6 24	2 57
6	T	5 31	6 26	4 10	5 32	6 24	4 13	5 34	6 23	4 16
7	F	5 32	6 24	sets	5 33	6 23	sets	5 34	6 21	sets.
8	S	5 33	6 22	6 47	5 34	6 21	6 48	5 35	6 20	6 50
9	S	5 34	6 20	7 11	5 35	6 19	7 14	5 36	6 18	7 17
10	M	5 35	6 19	7 39	5 36	6 18	7 43	5 37	6 16	7 47
11	T	5 36	6 17	8 10	5 37	6 16	8 16	5 38	6 15	8 22
12	W	5 37	6 15	3 47	5 38	6 14	8 54	5 39	6 13	9 1
13	T	5 38	6 13	9 33	5 39	6 13	9 41	5 40	6 12	9 48
14	F	5 39	6 12	10 27	5 40	6 11	10 35	5 41	6 10	10 42
15	S	5 40	6 10	11 27	5 41	6 9	11 33	5 42	6 8	11 40
16	S	5 41	6 8	morn	5 42	6 7	morn	5 43	6 7	morn
17	M	5 42	6 6	0 30	5 43	6 6	0 36	5 43	6 5	0 42
18	T	5 43	6 5	1 35	5 44	5 4	1 40	5 44	6 4	1 45
19	W	5 44	6 3	2 39	5 45	6 2	2 42	5 45	6 2	2 46
20	T	5 46	6 1	3 40	5 46	6 1	3 43	5 46	6 0	3 45
21	F	5 47	5 59	4 42	5 47	5 59	4 43	5 47	5 58	4 45
22	S	5 48	5 57	rises	5 48	5 57	rises	5 48	5 57	rises
23	S	5 49	5 56	6 5	5 49	5 56	6 7	5 49	5 56	6 10
24	M	5 50	5 55	6 26	5 50	5 54	6 29	5 50	5 54	6 34
25	T	5 51	5 53	6 52	5 51	5 52	6 56	5 51	5 52	7 1
26	W	5 52	5 51	7 23	5 52	5 51	7 28	5 52	5 51	7 34
27	T	5 53	5 49	8 2	5 53	5 48	8 8	5 52	5 49	8 16
28	F	5 54	5 47	8 53	5 54	5 47	9 1	5 53	5 48	9 8
29	S	5 55	5 45	9 55	5 55	5 45	10 3	5 54	5 46	10 10
30	S	5 56	5 43	11 7	5 56	5 44	11 13	5 55	5 44	11 20

PHASES OF THE MOON.

MOON.	D.	BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
		H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	7	8 16 mo.	8 4 mo.	7 52 mo	7 40 mo.	7 10 mo.
1st Quart	14	6 24 mo.	6 12 mo.	6 0 mo	5 48 mo.	5 13 mo.
Full M'n	22	10 50 mo.	10 38 mo.	10 26 mo	10 14 mo.	9 44 mo.
3d Quart.	30	1 36 mo.	1 24 mo.	1 12 mo	1 0 mo.	0 30 mo.

AMERICAN AGRICULTURIST.

NEW YORK, SEPTEMBER, 1877.

If a store-keeper, a blacksmith, or any other business man or mechanic, were to open his shop for one or two hours only, each day, and to spend the remainder of his time at some unproductive employment or recreation, he would soon shut up his shop altogether. A certain amount of productive labor is absolutely necessary to support every man. This amount is regulated by circumstances. These circumstances are beyond our control, but their operation is so certain, as to amount to what is called a natural law. When any business or trade becomes so profitable, that a living is made by it with less than the usual amount of labor, numbers flock into it, until the products become too plentiful, and their value falls so low, that longer hours of labor are needed to turn out a sufficient quantity of them to give the producer a living. Then people leave or avoid this business, and by and by it returns to the average condition of other industries, and gives a fair living for a fair day's work. But, under ordinary circumstances, if persons engaged in any business, do not perform a fair day's work, they do not get a fair living. Now it is complained, farming does not pay, that it does not afford a fair living. If this is true, it is especially unfortunate, because farmers are tied to their business, and can not leave it at a few days' notice. As a rule, we are certain that this is not true. But it must be confessed that there is some reason for the complaint. Farming certainly does not pay some farmers, and a good reason for this can be found by examining the Census Reports. There we find that in one of the principal New England States the average size of the farms is 76 acres; the average number of acres in grain and potatoes on each farm is only $2\frac{1}{3}$ acres; the average number of cows on each farm is less than 3; and each cow takes $11\frac{1}{3}$ acres to support her; there are less than two sheep to each farm; the same number of pigs, and little more than one horse. Each man engaged in farming cultivates only one acre and four-tenths in grains and potatoes, and $10\frac{1}{3}$ acres in grains, potatoes, and grass. Now here is a case paralleled by that of a mechanic, who should only work a quarter of a day, instead of full time. If any sensible farmer were asked, if a man could support himself by such management, he would reply *No* emphatically, and without any hesitation. The condition of the State in question is similar to that of the rest of New England, and other parts of the country. It is clear then, that it can not be helped that there should be dissatisfaction with the proceeds of so ineffectually employed labor; it would be surprising, and farming would be different from any other business, if it were not so. The remedy is obvious. Work must be well and effectually done, or the pay is poor. A day's wages can only be earned by a day's work. The proportion or ratio between work and pay is fixed by laws, which no man, or combination of men, can suspend or abrogate.

Hints for Work.

Sowing Wheat.—The majority of farmers prefer to sow wheat this month. Where there is no danger of the fly, and where the season of fall growth is short, most of the wheat is sown in August. The 10th of September is probably the date which suits the ideas and convenience of most farmers. We prefer not to be later than this if we can avoid it. This subject was sufficiently treated last month.

Varieties of Wheat.—A great number of new varieties of wheat have been tested of late. The Clawson wheat has become very popular on account of its hardiness. It is a smooth variety, with a plump, amber grain, and yields well. The "Gold Medal" has made many friends, but we know it only by report. Of all that we have grown, the Treadwell, the Clawson, and the Diehl, have succeeded best on moderately light soil, and we would choose them in the order here named. The Diehl is a fine white variety, but the white wheats need better soil and cultivation than the amber, and these better than the red wheats. It is a good farmer that can raise good crops of the white sorts. But then every farmer should try for the best. On the whole, however, the amber wheats will probably be found the most successful under ordinary cultivation, and, as a rule, they make excellent flour.

Cultivating Wheat.—We are experimenting with wheat sown in rows 16 inches apart, and the rows to be worked with a Rue's hand-cultivator. If it will pay to cultivate wheat here, as it does in England, it will be done. The proper implement can be had without difficulty. A common grain drill can be furnished with hoes to do the work. If other crops pay for cultivation, it is difficult to say why wheat should not. It only needs that the mode of sowing be arranged to suit. An experiment of this nature can easily be made on a small plot of ground, and may be very valuable in its results.

Sowing Timothy; Harrowing Wheat.—When grass seed is sown, harrowing wheat can not be done either in the fall or spring. The benefit derived from harrowing in both seasons, is certainly greater than the advantage of having the grass seed in the ground before winter. When clover is to be sown in the spring, it will be much safer to defer sowing the timothy until then, and sow it with the clover on the freshly harrowed ground.

Cutting Corn.—This is, or should be, the next great work of this month. It is unwise to defer it until October. The extra value of well cured fodder, not damaged by frost, is no small consideration. The corn is ready to cut as soon as it is glazed. It gains nothing by standing longer and the fodder is always deteriorated.

How Corn May be Cut.—We were amused recently to read in a first-class English agricultural paper that our method of shocking corn in America, was to put three hills of corn in a stook. In the East 25 hills, or 5 rows of 5 hills in each row, are put into a stook. In the West 7 hills of 7 rows, or 49 hills, often go into a stook. We prefer the latter, as it is a saving of time and space, and is especially preferable when the corn stubble is plowed and sown to wheat or rye. We prefer too, to bind the corn in sheaves, and set up the sheaves in a stook, binding the top of the stook with a stout straw band. The sheaves are necessary if the corn-husking machine is used, and very handy in case the corn is hauled to the barn to be husked.

Curing Corn-Fodder.—Corn-fodder should be bound in small sheaves, and these should be set up in stooks open at the bottom to admit plenty of air. Rain can not injure fodder thus cured. But if set close, rain that may reach the inside, will not dry, but will cause mold and injure the fodder.

Plowing Corn-Stubble.—When fall grain is sown upon corn-stubble, the stooks should be as wide as possible. The plan of binding in sheaves, will then be found very convenient, as the stooks may readily be set up 14 rows apart, or 7 rows on each side of each row of stooks. This will give nearly 40 feet of plowed ground in each strip, and leave very little space to be plowed afterwards. Then, if the ground is plowed by throwing the first furrows lightly towards the stooks, and finishing by an open furrow between them, the strips left may be plowed by throwing the furrows to those first made, again lightly, and finishing by a dead furrow in the middle. Then the ground will be left in lands 21 feet wide, a width, nearly 10 paces, that is usually given to the lands.

Thrashing Wheat.—When it is convenient, it is far the best plan to thrash wheat early. When put into the barn, it always undergoes a process of "sweating." This is caused by the water contained in the grain and straw, and which cannot all be dried out in the field, but which is evaporated by the process of heating and "sweating." The barn should be thoroughly ventilated during this process, and the doors thrown open every fine day, especially when a breeze is blowing. After this sweating has occurred, the grain thrashes easily, and may then be put away into the granary safely

The Straw is too valuable to be used for litter. Plenty of material can be procured for this purpose which costs nothing, and is good for nothing else, such as leaves, coarse grass, weeds cut before they blossom or seed, sand, dry earth, swamp muck, etc. These should be gathered in good time, and stored under cover or protected from the rain.

Digging Potatoes.—Potatoes should be harvested in good time, and put away in pits lightly covered. It is a good plan to sort the potatoes when picking them up, and thus save another and unnecessary handling. Keep the different sizes separate.

Clover Seed.—The second crop of clover for seed, may be cut with a mower, and gathered upon a frame, made of light strips of wood, or iron rods, to which a piece of canvass is sewed, and fastened to the cutter-bar by two bolts. The clover gathered upon the cloth can be raked off by a boy following with a wide hay-rake. The straw and chaff are useless for hay, and are not worth the trouble of preserving from the weather, but will make excellent litter for farrowing sows. To be wetted and dried two or three times, causes the seed to hull easily.

Fattening Animals.—It is now time to begin to fatten swine, sheep, and beeves intended for the market. The more of this work that can be done, the better for the farm and the farmer. We would purchase as many head as we could feed, and buy bran, corn-meal, oil-meal, or any other products of this character to be procured. If stock were bought with judgment, and fed with skill, they should bring in a handsome money profit, and leave a large quantity of valuable manure.

Cows.—Fresh milk cows should be liberally fed. If they fall off now, they can not be brought up again when colder weather comes. Failing pastures should be helped out with some fresh fodder, bran, or meal. Look out for injurious weeds in clover aftermath, such as lobelia and St. John's wort. When plentiful, these may cause fatal disease in cows, as we have known them to do with horses and colts. The presence of these weeds is indicated by profuse salivation or slobbering in the animals that have eaten them.

Sheep.—The breeding flock should now be put in order, culled over, and liberally fed. Half a pint of grain, per head, daily, given now, will help to bring the ewes in season early, and insure strong lambs, if good care is kept up through the winter. Separate all the ram lambs from the ewes, and keep the ewe lambs by themselves. Now that good mutton is becoming more popular in the markets, it would be well to consider the merits of the long wools as profitable sheep.

Whitewash.—There is no more healthful mode of cleaning stables, pens, and sheds, than to give them a good coat of hot lime-wash. An easy mode of doing this, is to make a barrel of the wash by slacking a bushel of fresh lime in a pork or other tight barrel, with only water enough to make a thick paste. When the lime is thoroughly slaked, fill up with boiling water, and let it stand six hours. Then take one of the Fountain Pumps described in the *American Agriculturist* for May, 1877, and spatter the walls with the wash, until every corner is covered. The lime that falls upon the floor will not be wasted, it will help to sweeten the place.

Sundry Matters.—Look out for the insurance on barns and stock; do not let the policy expire without renewing it; and by all means choose a responsible company to insure with....Clean out and whitewash cellars and root-houses....Remove rubbish from back yards and gardens....Repair fences. ....Open drains....Repair the corn-crib....Hunt out vermin and do all those things which need to be done to have all snug for the winter. Keep an observant eye open, and carry a note-book and pencil with you. It will be surprising how many things will be written down in it in the course of a few days.

Notes on Orchard and Garden Work.

This month is the orchardist's and gardener's harvest time—not so much for the ingathering of fruit and other crops, but for the collecting of the experience of others, and the harvesting of information that shall be of use hereafter. This is eminently the month of fairs and exhibitions. Besides the special horticultural shows, the State fairs, and in many cases the local or county fairs, have a special department for garden and orchard products, and the cultivator may properly give up a good share of this month to attending these gatherings—not altogether as a matter of recreation, but as an investment for profit. The profit we refer to is not that which comes in the shape of premiums awarded to the articles he exhibits, for while it is a laudable ambition to carry off as many as possible of these, this should not be the sole, or even the leading motive for attending the fairs. The principal profit comes from seeing what others are doing, seeing new varieties of fruits, vegetables, etc., in examining new implements, and above all, in meeting with other cultivators, and in talking with them as to their ways and methods. The successful men are generally enthusiasts in their pursuit, or, as often said—"ride hobbies." Such men are willing and glad to talk with others engaged in similar occupations, and it is hardly possible for a wide-awake man to visit even an ordinary fair, without learning something that he can turn to a useful account. Making the acquaintance of a variety of fruit or vegetable, that in earliness or other quality, is superior to that we now cultivate, will often put one on the road to prosperity.

But one should visit the fairs to show, as well as to see. If every one held back, because he felt sure that some one else would have something better, there would be no show at all. It is very disgusting to the managers of a fair—as we know from experience—to be told by a visitor: "I've got at home better grapes, (cabbages, or whatever,) than any I see here."—If you have made a mistake in not exhibiting, do not say anything about it, but resolve to do better next year. The proper course is, to show the best you have from the orchard or garden, and if others have better, try to learn the cause of the inferiority of your own.

This is the gala year of the fruit growers, as the biennial session of the American Pomological Society will be held Sept. 12th to 14th at Baltimore, Md. This is an association which every fruit-grower can, and which every one, large or small, should join. The work of the Society consists in recording new fruits, and in cataloguing the success of varieties in the different States. Besides this, and quite as important, are the opportunities for social intercourse, and the great advantages that come from personal acquaintance with fruit-growers from every State and Territory in the Union. We strongly urge all engaged in fruit culture, whether as amateurs or as a business, to connect themselves with this very useful National Society.

Orchard and Nursery.

The general failure of the fruit crop in England, indicates good prices for shipping varieties, especially of apples. American apples have established an excellent reputation in England, and meet with ready sale. Formerly the shipments were confined to a few hundred barrels of Newtown Pippins, but now Baldwins, Northern Spys, Spitzenberg, and other well-keeping and high flavored varieties are sent, in large quantities.

Marketing Autumn fruit, while less risky than that of the earlier varieties, requires care, and it is more likely to be picked and packed in too mature, rather than in a too unripe condition. Whatever the variety of apple or pear, it should always reach the market in a firm condition. Over-ripe fruit will bruise, and the sale is ruined. Sufficient is said last month and the preceding on the details of Marketing. See article on the Peach Harvest, in August, and on Orchard Helps, in the present issue.

Cider Making.—If any considerable portion of the crop is to be made into cider, to be disposed of as such, or converted into vinegar, the ways and means should be considered well before-hand, and grinder, press, barrels, and the needed store-room be all in readiness. Presses of the capacity of a few bushels, up to those that work up 800 bushels a day, may now be had. An account of a powerful press was given in July last. Those who make nearly their whole crop of apples into

Vinegar, find it profitable to have a small press to work up the windfalls every few days. This both prevents the increase of insects, and utilizes for vinegar what would otherwise go to waste.

Drying Fruit, for family use or for sale, is sufficiently discussed in an article on page 338.

Budding will continue until the sluggish growth renders the stocks unfit. Full notes were given last month. Do not omit to examine the budded trees, as there directed, and cut the ties at the proper time. If the stocks are in good condition, the failures may be rebudded.

Seeds of Stone Fruits, peaches, plums, and cherries, need be kept from drying too much, and in a cool place. Mixing with a plenty of sand, is the best treatment. The notion that stones from "natural," or unbudded peach trees only, should be used to raise stocks, is founded upon the fact that such trees are generally healthy, but some experienced planters use stones from the best peaches, provided they are from healthy trees.

Preparing for Fall Planting.—Except in northern localities, where the season is brief, fall has several advantages over spring as a season for planting. Not only is the soil in better condition, but there is more time to devote to the work, which is likely to be more thoroughly done, and the season is more favorable for the taking up and the safe transportation of trees. If the planting is not to be done until spring, it is better to prepare the land by manuring and plowing in the fall.

Fruit Garden.

Excepting the grape vines and fruit trees, the plants have yielded their crop, and should now be treated with reference to next year's fruiting.

Fall Planting is as desirable here, for most things, as it is in the orchard, and for the same reasons.

Blackberries and Raspberries, especially, are better set in the fall, as they push underground shoots very early in the spring, and growth is apt to be well advanced before it is suspected. Keep the canes and branches shortened, as directed last month.

Currants and Gooseberries should be pruned as soon as growth ceases and the leaves fall, and cuttings for new plants put in. If these are set in the fall, they will often be rooted by the time the ground freezes.

Strawberries.—While there is nothing to be gained in the time of bearing by setting in the fall, it is often a more convenient, and always a pleasanter time for the work, but in northern localities the plants do not get sufficiently well established, and are liable to be thrown out by the frost, hence fall planting is not advisable, where the climate is any more severe than that of New Jersey.

Blackcap Raspberries and the red-fruited varieties of the Purple Cane class, are propagated from the tips of the long and slender shoots, which naturally arch over and reach the ground for that purpose, hence where plants are wanted, a sufficient number of these branches to supply them should be allowed to grow unchecked. When they reach the ground, their striking root may be favored by placing a little earth upon the ends; only enough should be put on to prevent them from being moved by the wind; too much may cause the green tip to decay.

Grapes which have gone on prosperously until just ready to color, are sometimes attacked by mildew, and can only be saved by the free use of sulphur, which should be applied with care, to secure a very fine but even dusting. If carelessly applied, the sale of the fruit will be injured. Grape scissors are made which hold the bunch by the stem after it is severed from the vine; the use of these avoids handling the clusters, which, however carefully done, will remove some portion of the bloom.

Pears, almost without exception, are better for ripening in the house. If the stem parts readily from the tree, when the fruit is lifted, it is time to gather and place on shelves in the fruit room, or in shallow boxes, where its condition may be watched. Laid between the folds of a blanket, pears will often color up finer than by any other treatment.

Kitchen and Market Garden.

The condition of many gardens this month shows an utter disregard of neatness, and a shameful amount of waste. The refuse of a family garden of moderate size, will go far towards the keep of a cow, and still further towards that of a pig. If neither of these animals is at hand, to utilize a share of the refuse and turn the rest into manure, there should always be a compost heap to receive them. By thus disposing of the rubbish, the garden may be kept in as good order now as at any season.

Cabbage and Cauliflower seed, for plants to be wintered over in cold frames, is sown this month. It is important to do this just at the proper time; if the sowing is made too early, the plants will get too large, and when planted out in the spring, instead of forming good heads, will tend to push flower-stalks and run to seed. On the other hand, if sown too late, the growing season will not be long enough to allow them to get sufficiently strong to pass the winter safely. The market gardeners near New York find the proper time limited to within a few days either way, of Sept. 15th. To have the plants in the proper condition, careful gardeners make two sowings, each time using seed enough for a full supply. Some sow on the 10th and 20th, and others on the 12th and 16th, on a carefully prepared and enriched seed-bed in the open ground, and the plants are usually ready to be "pricked out" in the frames in four weeks from the sowing. In more northern localities, this must be done earlier, and in more southern ones, later.

Lettuce is another plant which, for the earliest spring crops, is wintered over in the same manner, and the seed is sown at the same time with those of cabbage and cauliflower. The Simpson, a sub-variety of the Silesia, is a favorite sort for this purpose, and the Black-seeded Butter.

Borecole, or Kale, usually known in the market as "Sprouts," is a kind of cabbage that does not head; the variety most in use is known in the seed-stores as "Dwarf German Greens." The seed is sown, near New York, at the end of August or early this month, in rows 15 inches apart. When 2 inches high, they are thinned, by cutting out with a push-hoe, to 6 or 8 inches, and kept clean. If the plants have not spread enough to cover the ground, a light covering of salt-hay or straw is given, but if they are large enough, no covering is put on them. It is ready for use in May.

Spinach may be sown for both fall use and to keep through the winter. It should not be sown later than the middle of the month, in drills 12 or 15 inches apart. The crop is to be kept clean as long as the frost keeps off, and when large enough, it is carefully thinned, and the thinnings used; this gives the plants that are to remain more room, and they grow strong and able to stand the winter. In the market gardens it is not often covered, but we think it comes out better in the spring to cover slightly with marsh hay.

Corn Salad, or Fetticus, the green leaves of which appear very early in the markets, and much used, especially by Europeans as a salad, is sown and treated in all respects like spinach, but it is necessary to give it some protection.

Turnips of the flat kinds may still be sown, and in favorable seasons will make a crop, even if sown as late as the 10th or 20th.

Growing Crops should now be coming on finely, especially those that, like celery, late cabbage, rutabagas, etc., flourish best when the nights are cool and the days warm. They should be encouraged by frequent use of the hoe and cultivator.

Sweet Potatoes need little other care than an occasional moving of the vines, to prevent them from taking root.

Melons are ripe when the stem easily parts from the fruit; the ripeness of water melons can only be judged by the sound when struck with the finger, a sound which can not be described, but is soon learned. It is well to remove all the fruit not likely to mature; the young musk-melons may be used for stuffed pickles or "mangoes."

Shallots, the young bulbs of which are used in spring as a substitute for onions, are hardy, and may be set this month.

Pickling and Preserving.—Cucumbers need picking every day or two. Martynias must be taken while very tender. String and Snap Beans are prepared as if for cooking, and put down in salt. Green corn, of proper size for eating, is boiled, cut from the cob and dried; it is sometimes cut from the cob raw, and salted. Green tomatoes should be secured for pickling before frost injures them. Winter Cherries or Strawberry Tomatoes drop when ripe; they may be gathered and used for sweetmeats at once, or spread in an airy place to be used when all are gathered. Make tomato catsup while the fruit is still in perfection and plenty.

Clear up the ground as soon as a crop is off. Manure, spade, and have it ready for spring....As soon as sweet corn is gathered, cut up the stalks and cure them for fodder....Look out for late weeds, and do not put seed-bearing ones on the manure heap, but burn.

Flower Garden and Lawn.

The excessive heats of summer being over, the late flowers now have their opportunity, and the borders should be bright until frosts come.

Dahlias, besides a strong stake for the main stem, often need shorter ones for the principal branches, else the weight of bloom may cause them to break away at the junction with the stem. Grasshoppers often injure their flowers, and those intended for exhibition must be protected by netting. Cut away the blooms as soon as past their prime, and remove all buds that show malformation.

Chrysanthemums, from their great beauty and variety, are not in such general cultivation as we should suppose; they are generally hardy, and though they flower so late that the frosts catch them in their prime, they stand up to their work until the very last, and as the rear guard, nobly cover the retreat of the floral army. But one can pot as many as he chooses, and thus enjoy their bloom for some weeks. As soon as the buds are fairly developed, pot them, give shade for a few days, and when the increase in size of the buds shows that they have recovered, give very weak manure water, or a teaspoonful of guano to the gallon of water. They will bloom more satisfactorily in a sunny window of a room without fire.

Chrysanthemum Troubles are numerous; sometimes a black aphis or plant louse will completely cover the ends of the branches—strong Tobacco Water. They also are the favorite food of several hairy caterpillars, several of which may be found disfiguring the foliage of one plant—hand-pick. Then the stems will break on the slightest provocation, especially when heavily loaded with buds—sticks and strings, and a plenty of them.

Violets, if wanted in late winter or early spring, must be provided for now. Prepare a frame with very rich soil, and set healthy young plants from runners. When freezing weather comes, cover the plants with leaves and put on the glass. In February remove the leaves, and flowers will soon appear.

Hardy Herbaceous Perennials are mostly through with flowering, and may be divided and reset. Those which form a large clump of fine roots, may be divided by the use of a sharp spade, but those with large roots need more care; shake or wash away the soil so that the whole may be seen, and divide, using a strong knife, so as to leave each bud with a share of the root. The present is a favorable time to procure and set new plants of this class, as some flower too early for successful removal in spring.

Lawns, as the cooler weather encourages the growth, may have more frequent mowings. Sow seeds on thin spots.

Insects.—Ornamental trees are apt to be disfigured by the Fall Web-worm, which is easily removed.

Greenhouse and Window Plants.

As any sudden change next month may make it necessary to house tender plants, no time should be lost in having all in readiness. See that the heating apparatus needs no repairs. Paint, glaze, and repair generally.

Plants for Winter, whether for blooming or for keeping over, should be looked out for this month. Propagate verbenas, geraniums, and others that are in the open ground. Young and vigorous plants are always better than old and misshapen ones.

Hanging Baskets and flower-stands for winter should be filled early, that they will be well established by the time cool weather comes.

Soil, Pots, and other needed articles, should be got ready in good season, and stored for winter use.

Sand upon the greenhouse benches should be renewed, not only for appearance, but to get rid of various animal and vegetable pests.

Bulbs for early winter blooming should be procured as soon as the dealers offer them.

Planting Deciduous and Evergreen Trees and Shrubs in the Fall.—We have frequently advocated the fall planting of most fruit trees at this season, and for the same reason we prefer this season for deciduous ornamental trees and shrubs in all mild climates. While there is but little difference of opinion as to the propriety of setting in autumn, the hardy trees that drop their leaves then, there is no subject upon which tree planters differ more than the proper time for planting evergreens. Some do this in early spring, while others prefer to wait until growth is about to start, and while some entirely disapprove of fall-planting, others find it one of the most favorable seasons. This diversity tends to show that success will follow planting at either season, if proper care be taken. Messrs. Saml. B. Parsons & Sons, whose experience in such matters has been very large, inform us that they sell many evergreens to be set in the fall, and if the planting be done in early autumn, when the ground is warm and mellow, and in localities where the season is long, we have no doubt that the result will be satisfactory. Messrs. Parsons & Sons, of Flushing, N. Y., have a very large and remarkably varied stock of this class of trees, including some that are very rare, and not to be generally found. There is too much sameness in the selection of evergreens, and, indeed, other trees for planting, and those who set trees that will ultimately grow large, on small places, make a great mistake; there is a number of low growing forms, well suited to small places, and which will never reach so large a size, as to make it necessary to cut them out, because they crowd one another, and shut out the light and rain. The better way for one who wishes to plant, and does not live too far away, is to visit Kissena Nurseries, where specimen trees may be seen, and make selections on the spot; or if unable to do this, send for Parsons & Sons' descriptive catalogue, as above. The stock of evergreens is perhaps unrivalled, and the collection of ornamental deciduous trees and shrubs unusually fine.

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Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Aug. 12th, 1877, and for the corresponding mouth last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	221,000	2,476,000	2,931,000	67,000	206,000	1,042,000
25 d's *last* m'th	267,500	2,541,000	3,104,000	79,000	197,000	1,281,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	383,000	2,906,000	6,113,000	357,000	168,000	1,296,000
25 d's *last* m'th	354,000	2,605,000	4,216,000	119,000	225,000	1,209,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877..	221,000	2,476,000	2,931,000	67,000	206,000	1,042,000
26 days 1876..	305,000	2,451,000	2,060,100	112,000	65,000	1,015,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877..	383,000	2,906,000	6,113,000	377,000	168,000	1,296,000
26 days 1876..	412,000	2,634,000	3,107,000	39,000	——	1,104,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Aug. 6, 1877..	162,325	320,094	22,615	11,595	576,090	252,861
July 9, 1877..	418,655	368,858	39,828	92,434	925,153	245,032
June 11, 1877..	521,308	620,643	206,815	91,846	826,054	296,129
May 7, 1877..	761,686	468,809	193,046	174,375	347,881	291,654
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,663,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Exports from New York, Jan. 1, to Aug. 8.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1877..	662,300	5,123,400	12,997,100	835,000	842,100	97,100	153,400
1876..	1,164,721	11,575,520	8,844,000	691,000	28,100	362,000	455,987
1875..	1,129,041	14,650,208	7,225,590	120,163	165	75,147	229,589
1874..	1,365,480	23,290,750	14,513,411	531,001	320	72,311	263,883
1873 .	791,998	9,278,612	7,669,335	327,970	19,226	20,839	92,496
1872..	547,794	5,479,949	14,572,323	510,678	22,666	29,706	123,093
1871..	1,095,079	10,556,653	6,341,032	71,399	81,797	16,764	——
1870..	1,069,227	10,236,357	220,647	65,734	——	11,205	——
1869..	812,764	9,099,803	1,537,077	72,811	——	42,727	——
1868..	575,091	3,209,204	4,903,872	158,073	——	40,643	——

5. *Tide-water Receipts at Albany, from opening of navigation to Aug. 7th:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1877..	3,100	1,534,700	8,385,100	192,900	389,700	960,300	277,500
1876..	13,700	7,597,500	2,565,000	327,000	114,500	1,791,200	365,500
1875..	27,200	7,504,600	1,932,200	68,700	——	1,023,200	456,500
1874..	35,100	11,590,000	9,795,200	189,800	74,100	1,216,700	356,300

CURRENT WHOLESALE PRICES.

	July 12.	Aug. 13.
PRICE OF GOLD	**105 3-8**	**105 1-4**
FLOUR—Super to Extra State	$5 50 @ 7 25	$4 65 @ 6 40
Super to Extra Southern	5 65 @ 11 25	4 75 @ 9 50
Extra Western	6 25 @ 11 25	5 50 @ 9 50
Extra Genesee	7 25 @ 9 25	6 00 @ 8 25
Superfine Western	5 50 @ 6 40	4 65 @ 5 35
RYE FLOUR	4 25 @ 5 25	4 00 @ 5 10
CORN-MEAL	2 65 @ 3 55	2 85 @ 3 50
WHEAT—All kinds of White	1 85 @ 2 15	1 40 @ 1 60
All kinds of Red and Amber	1 00 @ 2 00	1 00 @ 1 55
CORN—Yellow	60 @ 64	61 @ 63
Mixed	57 @ 61	54 @ 60½
White	60 @ 67	62 @ 70
OATS—Western	32 @ 58	27 @ 43
State	56 @ 63	45 @ 55
RYE	72 @ 95	65 @ 87
BARLEY	50 @ 1 10	50 @ 90
BARLEY MALT	70 @ 1 30	75 @ 1 35
HAY—Bale, ℔ 100 lbs	55 @ 95	60 @ 1 00
STRAW, ℔ 100 lbs	45 @ 70	30 @ 70
COTTON—Middlings, ℔ lb	12⅛ @ 12¼	11½ @ 11⅝
HOPS—Crop of 1876, ℔ lb	5 @ 14	4 @ 12
" old, ℔ lb	2 @ 8	2 @ 6
FEATHERS—Live Geese, ℔ lb	35 @ 45	35 @ 45
SEED—Clover, ℔ lb	Nominal.	Nominal.
Timothy, ℔ bushel	1 85 @ 2 00	1 75 @ 1 90
Flax, ℔ bushel	1 65 @ 1 75	1 50 @ —
SUGAR—Refi'g & Grocery ℔ lb	8½ @ 10⅛	7¾ @ 9¾
MOLASSES, Cuba, ℔ gal. 50 test	42 @ 43	35 @ —
New Orleans, new crop, ℔ gal	45 @ 58	40 @ 55
COFFEE—Rio (Gold)	17 @ 20¾	16¾ @ 20¾
TOBACCO, Kentucky, &c., ℔ lb	4 @ 17	4 @ 17
Seed Leaf, ℔ lb	4½ @ 50	4½ @ 50
WOOL—Domestic Fleece, ℔ lb	32 @ 55	35 @ 55
Domestic, pulled, ℔ lb	20 @ 42	22 @ 45
California, spring clip	13 @ 35	13 @ 32
California fall clip	10 @ 25	10 @ 25
TALLOW, ℔ lb	7⅞ @ 8¼	8 @ 8¼
OIL-CAKE—℔ ton	34 00 @ 34 50	35 00 @ 35 50
PORK—Mess, ℔ barrel	14 35 @ 14 40	13 90 @ 14 00
Extra Prime, ℔ barrel	10 00 @ 10 50	9 00 @ 10 75
BEEF—Plain mess	11 00 @ 12 00	11 00 @ 12 00
LARD, in trcs. & bbls. ℔ 100 lb	8 25 @ 10 00	7 37½ @ 9 75
BUTTER—State, ℔ lb	12 @ 23	14 @ 27
Western, poor to fancy, ℔ lb	9 @ 22	11 @ 26
CHEESE	3 @ 9¾	3 @ 10¼
BEANS—℔ bushel	2 25 @ 3 50	2 30 @ 3 60
PEAS—Canada, in bond, ℔ bu.	93 @ —	83 @ 85
EGGS—Fresh, ℔ dozen	14½ @ 17½	14 @ 18
POULTRY—Fowls & Chickens	10 @ 18	10 @ 15
Chickens, spring, ℔ lb	20 @ 24	12 @ 18
Turkeys—℔ lb	10 @ 16	12 @ 16
Geese, ℔ pair	1 12 @ 1 20	1 25 @ 1 50
Ducks, ℔ pair	60 @ 1 00	50 @ 1 00
Roosters, ℔ lb	6 @ 7	6 @ 8
PIGEONS, wild, ℔ dozen	1 25 @ 1 50	— @ —
SQUABS, per dozen	50 @ 1 00	— @ —
TURNIPS ℔ bbl	— @ —	40 @ 50
" ℔ 100 bunches	1 50 @ 2 00	1 00 @ 1 37
CABBAGES—℔ 100	2 00 @ 6 00	1 12½ @ 3 50
ONIONS—new, ℔ bbl	2 75 @ 3 00	1 50 @ 2 50
" ℔ crate	1 00 @ 1 50	— @ —
LETTUCE, ℔ bbl	50 @ 1 00	37 @ 60
POTATOES—new, ℔ bbl	1 50 @ 5 50	1 00 @ 1 50
TOMATOES, new, per bush	1 00 @ 2 50	25 @ 40
BEETS, ℔ 100 bunches	1 50 @ 2 25	1 00 @ 1 50
STRING BEANS, ℔ bag	50 @ 1 00	50 @ 62½
CUCUMBERS, ℔ bbl	— @ —	40 @ 65
BROOM-CORN	4 @ 8	4 @ 8
GREEN CORN, ℔ 100	— @ —	30 @ 60
GREEN PEAS, ℔ 2 bush bag	— @ —	50 @ 1 25
WHORTLEBERRIES, ℔ bush	2 75 @ 3 50	1 50 @ 2 00
APPLES—℔ barrel	1 25 @ 4 50	1 50 @ 3 50
SQUASH, ℔ bbl	— @ —	50 @ 1 00
PEANUTS, domestic, ℔ bush	1 20 @ 1 50	— @ —
Melons, per 100	— @ —	8 00 @ 25 00
" ℔ bbl	— @ —	1 25 @ 2 50
PEARS, ℔ bbl	— @ —	1 50 @ 4 50
PEACHES, ℔ crate	1 00 @ 3 50	40 @ 3 50
CURRANTS, ℔ lb	6 @ 10	5 @ 8
BLACKBERRIES, ℔ qt	8 @ 15	7 @ 10
PLUMS, ℔ bush	— @ —	2 50 @ 4 00

Gold has been up to 106⅛, and down to 105, closing Aug. 11, at 105¼, as against 105⅜ on July 12; 104⅞ on June 12; 107¼ on May 12; 105⅞ on April 12; 104⅝ on March 12; 106 on January 12; 107¼ on Dec. 12, 1876, and 111½ on the 14th of August, 1876 ...Very material reductions have occurred during the month in the prices of most kinds of domestic produce, notably so in Breadstuffs, Fruit, and Vegetables, influenced by the liberal offerings of the new crop....The course of Breadstuffs nearly all through has been downward. The foreign market advices have been of an adverse tenor, tending to impede the export movement. The stronger range of ocean freights has been also against this interest. The home trade requirements have been on a moderate scale. Flour (of the new crop) and new Wheat have been offered much more freely, the Wheat largely of new crop winter, to arrive in August and September, and sellers have been eager to place supplies, leading to a marked decline in values. The new Winter Wheat thus far shown here, has been of superior quality. A few samples of new crop Spring Wheat have likewise been exhibited, including one of No. 2 Chicago, which averaged 61½ lbs. to the bushel. Corn has been in better supply, and depressed in price, though on an active trade, largely in options for August, September, and October deliveries. Much of the Corn of recent receipt here, was "out of order," and had to be sold at low figures. Included in the recent export purchases of corn, have been several cargoes for shipment to Italy, of which were two cargoes of distilling Corn @ 54 cts. ℔ bushel. Rye has yielded in price, and has been fairly active at the ruling quotations, especially No. 2 Western, for export to the Continent. Two or three boat-loads of new crop State have been sold, to arrive soon, at 86c. Barley dull; feed stock only meeting with inquiry of moment, and this for shipment to the United Kingdom. New crop six-rowed State Barley offering to arrive at 90, with 80 @ 81 bid. Oats less sought after, and much cheaper. Several lots of new crop Western have been sold, mostly to arrive....Cotton has been quoted lower, on a restricted movement....Hay quiet, and Hops slow of sale within our range....A fair inquiry has been noted for Tobacco, in good part for export, at unchanged figures.....Provisions have been in less demand, and generally quoted weaker in price... Rice has been in more request, and quoted strong....Groceries quiet; Sugars and Molasses fell off decidedly in values ...Wool attracted less attention, and closed in favor of purchasers under more liberal and urgent offerings....New crop Flax-seed has been recently quite freely purchased for August and September delivery, (reported to the extent of 100,000 to 125,000 bushels), on the basis of $1.50 ℔ bu., for crushers' use, thus formally opening the new season. ....Other seeds very dull as yet; quoted irregular.... Ocean freights have been fairly active, and at the close, higher for Grain; otherwise firm....Grain rates by steam to Liverpool closed on the 11th of August at 8 @ 8½*d.*; to Glasgow at 5*d.*; to London at 8*d.*; to Liverpool, by sail, 7 @ 7½*d.*; London, by sail, 6½ @ 7*d.*, per bushel. Provisions by steam to Liverpool, 40*s.* @ 55*s.* per ton; Cotton by sail and steam at ¼*d.* ℔ lb. Grain, by sail, for Cork and orders, at 5*s.* 9*d.* @ 6*s.*, and to Danish ports, 6*s.*@6*s.* 3*d.*; Italian ports, 5*s.* 9*d.* @ 6*s.* per quarter. The railroad strike was severely felt by receivers and forwarders of produce.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
July 23	8,385	61	3,686	18,572	16,596
July 30	7,028	66	4,167	21,309	7,345
Aug. 6	12,719	34	3,175	22,082	17,686
Aug. 13	7,539	83	3,222	30,688	21,064
Total for 4 Weeks	35,671	244	14,250	92,721	62,691
do. *for prev. 5 Weeks*	50,590	390	21,646	120,121	102,067

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	8,908	61	3,562	23,178	15,698
do. do. *last Month*	10,118	78	4,329	24,024	20,413
do. do. *prev's Month*	6,745	65	4833	20,668	20,361

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
July 23	9½@13½c.	9½@13c.	11¼c.
July 30	9 @14½c.	10½@12¾c.	11¾c.
Aug. 6	8 @13 c.	9 @12 c.	10½c.
Aug. 13	7¼@13¼c.	9 @11½c.	10 c.

Beeves.—The effects of the blockade by the strikers on the different railroads, in the latter part of July, disturbed the market greatly. As might be expected, prices advanced, simply because for a time no cattle came forward, except all those which would have been unsalable under ordinary circumstances. Good cattle went at 14½c. ℔ lb., and many of the trash were about to be sold when, as suddenly as the roads were closed, they were opened again. Supplies then came forward so quickly, that the market was knocked the other way, and the gain and more was all lost. Foreign shipments, which were almost suspended, then began again, and after the lowest point was reached, a reaction took place, except for the poor stock; for them there was no chance to rise, and hardly any sale. Fat stock fit for shipment, were scarce, and if the market had been at all brisk, there would have been a strong advance. As it was, the best, averaging 58 lbs. to the gross cwt., reached 13¼c. ℔ lb.; prime steers brought 12@12¾c., and the poorest natives of 55 lbs., sold for 8¼c. Common stock had a hard time at the close of our report. Texans sold for 7¼c. for 54 lbs., to 9¼c. ℔ lb. for good, averaging 55lb.

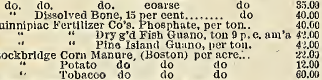
Cows have been in good demand, and light supply and naturally have advanced $5 @ $8 per head. Good family cows are eagerly taken at $60 to $65 each, and ordinary milkers went off slowly at $50 to $55....**Calves.**—The railroad blockade did not affect this class of stock, except to cause an over-supply from near by localities. A drop was the result, which required two weeks to recover. At the close an advance was made on prime veals, which sold for 7½ @ 8c. ℔ lb., live weight. Grass calves raised on buttermilk, sold at 3½ @ 4c. ℔ lb., and the best brought only 4½c. Fair veals sold easily at 7 @ 7¼c .. **Sheep and Lambs.**—The business in wooled stock has been very bad the past month. An effort was made to crowd sheep upon the market in place of beef, but this had the effect of running down prices 2c. ℔ lb., lambs suffering the most. A partial recovery was made at the close, prime sheep selling for 5½c. ℔ lb. live weight, while poor brought only 3½c.; thin lambs sold for 5@5½c. ℔ lb. alive, and extras at only 6¾c.....**Swine.**—The fear of a strike amongst the butchers, early in the month, prevented the scarcity from helping prices, and kept the market dull. After a slow and irregular business for the month, prices settled down to 5¾ @ 5⅞c. ℔ lb. for live, and 6¾ @ 7¼c ℔ lb. for dressed, with a market quite devoid of animation.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton..	$56.50
do. do Lobos, do. do. do.....	47.50
do. do guaranteed, ℔ ton, cargo C	56.00
do. do. rectified, per ton, 10 p. c..	66.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Wheat and Grass Manure, ℔ 1,000 lbs.,	27.00
do. Tobacco do. do.	24.67
do. Turnip do. do.	19.36
do. Bone, strictly pure fine........ ...per ton.	40.00
do do. do. medium do.	37.00
do. do. do. coarse do	35.00
" Dissolved Bone, 15 per cent........ do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.00
" " Dry g'd Fish Guano, ton 9 p. c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
Bowker's Hill and Drill Fertilizer, per ton........	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton..........	7.00@8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (actual potash 44 per cent) per lb....	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$20.00
Muriate of Potash (actual potash 50 per cent), per lb...	2½c.
Nitrate of Soda, per lb..........	4½c.@ 5 c.
Sulphate of Ammonia (25 per cent.), per lb....	4¼c.@ 4½c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$50



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss..**Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.50 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (50 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time at the club rates, if new members begin at same date as original club.

Special to Far-off Readers—Making Things Equal.—Many of our readers live at great distances, on Continents and Islands stretching clear round the globe. Not a few are directly under us, as in Australia, New Zealand, etc.,—or we might say directly *over* us at midnight, if we call *up* towards the sun. Now these distant readers don't get their paper by telegraph, and it will be too late after its arrival to interest their friends and neighbors in the Special Offer on page 325. To meet all these cases, and treat all alike, the Publishers desire to say this: ☞ *The offer of extra numbers on page 325 will be open, everywhere, for* TEN DAYS *after this number comes to hand.* This will apply to any place in the world, where this September number does not arrive by Sept. 20. Six cents (or 3 English pence) should be added for extra postage on the extra numbers, to points where the regular prepaid postage is 24 cents a year.

That "Book Acre."—Last May it was suggested that an additional acre of land be set aside, to be cultivated at odd hours, to be called the "*Book Acre,*" and the entire proceeds be invested in good books on farming. Several acted upon the hint—probably very many of whom we have not heard. Questions now come "What Books do you advise?" The range is large, and individual wants differ. If those who desire such advice will briefly tell us their locality, general products they are raising, age of members of their families, and what books they may have on hand, and the amount to be invested, we will advise the best we can, either by personal letters, or by a general article, if there be enough of similar cases to warrant it. Some suggestions in this direction will be found on the third cover page of this paper.—**But** in addition to those who have such a special acre, there should be many others who will take advantage of the present good crops, to lay in a supply of valuable, helpful, profitable information in the form of good books. To such we will afford any practicable assistance we can in the way of selection.

The New Conn. Agricultural Experiment Station, is now organized ready for work. Circulars giving full particulars as to the kind of work to be done, analyses of fertilizers for farmers and others, etc., etc., can be obtained by addressing the Secretary, Prof. W. H. BREWER, New Haven, Conn.

Dip the Lambs and Sheep this Month.—It is now well established that the disease in sheep known as scab, is due to a minute insect, similar to that which causes the itch in man; in both cases we have only to destroy the insect, and the disease will disappear. With sheep, the most effective method is to dip the animals in some preparation that, while fatal to the insect parasites, will not injure the sheep or the persons engaged in dipping them. Arsenical preparations should only be used with a full knowledge of their character, and with proper precautions against danger. But there is really no need of using arsenic and such dangerous poisons, as there are effective dips that are free from these. "Buchan's Cresylic Sheep Dip," which contains carbolic, and similar acids, combined with soap, is not a secret compound, and is not injurious to the animals or the operators. It has now been in the market for several years, and has met with the approval of those who have made use of it. Careful flock-masters are not content with the usual spring dipping only, but as a matter of precaution, give a second dipping the present month, whether insects are seen or not, with a view to rid the animals of ticks, lice, etc., as well as the scab insect. Not only does this add greatly to the comfort of the animals, but it promotes the growth of wool sufficiently to cover the cost and trouble of the autumnal dipping.

Never the Same.—To the unobservant reader the front page of the cover may *appear* always the same. *But no two are ever alike.* Five new, original engravings, usually appropriate to the season, grace every successive number—one in each corner, and a larger one in the center—and these are generally highly artistic, and pleasing to the eye.

Plan of Grounds.—Will the correspondent at Bordentown, N. J., who sent this, give his name?

Temperance Songs.—In these days of activity in behalf of temperance, large meetings are held, and these are much enlivened by good singing. As a help to this end, White & Cole's "Temperance Songs," published by White, Smith & Co., Boston, are just the thing.

The Wheat Crop.—The present crop of wheat is estimated by the Statistician of the Agricultural Department, who has the best means of arriving at a correct conclusion, at over 320 millions of bushels, or about 8 bushels per head to the whole population of the United States. Our consumption is less than 5 bushels per head, which is the estimated supply needed for those countries where wheat bread is the staff of life. But here we use much rye, buckwheat, and corn, as breadstuffs, and these all go to decrease the consumption of wheat. There will certainly be a surplus of more than 100 millions of bushels of wheat to dispose of to foreign countries. Have we the market for all this vast quantity? Upon this question, considered with reference to the present price, depends the farmer's gains from this crop. Looking at all sides of this question, it does not appear that the farmer has anything to grumble about, although he may not get the top price for his wheat. A large Western farmer, known to us, has already marketed his crop of over 3,000 bushels, at $1.25 per bushel. Under present circumstances this should be quite satisfactory, and our friend congratulates himself *that he has made a sure thing of it.* It is worth something to feel in this way. As things in general now stand, farmers are the best off of any class, although prices are low. But it must be remembered that we are still on the descent to the bottom; and if in such a disagreeable passage, any class of people can find cause for congratulation—as indeed farmers can without searching long for it—then things may not, after all, be so bad as they seem, and hope may still give a silver lining to the dark cloud of business depression.

Among Other Things to do at the Fairs, take along a copy of this paper, and show it to some of the people; let them see its face, and tell them by subscribing now for 1878, they will *get all the rest of this year free.* Quite a club can thus be readily gathered, reducing the price to each. Crops are now good, and money is coming in for them, and it is a good time to make up clubs. The offer on page 325 will help a good deal—the extra numbers being a special premium *to* each new subscriber.

Abortion Among Cows.—"W. J. F.," New Castle Co., Del. Abortion is unfortunately a frequent occurrence amongst high bred and highly kept cows. The remedy is not easy to indicate. The causes are at present very obscure, and much difference of opinion exists in regard to them. The fullest information about this disease, and the proper treatment for its prevention, is given in an English work, now publishing in parts, entitled Veterinary Obstetrics. It is by the well-known English surgeon, George Fleming. When the work is complete, it can be procured through the Orange Judd Company. The price of the complete work is not yet announced, nor the number of parts to be issued.

Price of Lambs in New York.—"F.," Faulkland, Del. The price of lambs quoted in our market reports, of course is subject to all charges for freight, commission, and packages, if any are used. Very young lambs are boxed. It is a question if 10 cents per lb. in New York, would pay as well as 5 cents at home, where there are no heavy charges to come out of the proceeds. We have generally found the home market the best and most satisfactory. The names of respectable commission men will be found among the advertisements.

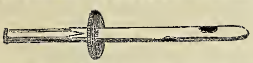
The National Agricultural Congress, meets at Chicago, at the Grand Pacific Hotel, on the 23d, and continues for three days. Agricultural Associations, Colleges, and Periodicals are asked to send representatives, and all persons interested in its objects are invited to be present. The Hon. W. C. Flagg, Moro, Ill., is President, and Horace J. Smith, Phila., Pa., Secretary.

Every Fruit Grower should recollect that the Am. Pomological Society will hold its biennial session this month, at Baltimore, Md., from the 12th to the 14th. All who can should go; if not members, they should, and easily can, join. There is every reason to believe that the health of Col. M. P. Wilder, the honored President, is such as to allow him to be present.

Wire Beds are one of the best of modern improvements. They cost much less than good hair mattresses, are more cleanly, are almost as elastic as a water-bed, and are durable. They do not need a mattress over them, but only covering enough to afford warmth to the body. This is said after having used them for three years. The last one tried, which proves admirable, is called the "Farnham Improved Woven Wire-Bed," manufactured by Hiram Buckingham, of Chester, Conn., and is retailed at $12, (we believe the first ones made cost some $20 or $25.) We obtained it of W. C. Case, agent at Middletown, Conn. The impositions practised by traveling agents in some parts of the country, as noticed in our Humbug columns, has tended to cast distrust upon a valuable addition to household comforts. They are supplied by trustworthy dealers and agents.

As to Incubators.—"E. N.," Hollister, Cal. The two incubators described in the *American Agriculturist* for July, 1876, differ in the methods of heating. The Corbett machine is operated by means of fermenting horse manure. If any person is unacquainted with the behavior of such manure, he is apt to cook the eggs, or to let them cool, and in either case destroy them. The Day incubator is heated by a self-regulating lamp, fed with kerosene oil, and as this may be made, by a little attention, very certain in its operation, the Day process is to be preferred by those who either can not well procure the requisite manure for the Corbett machine, or do not know how it works when in active fermentation, or who do not wish to give constant supervision to the incubator day and night.

Milking Tubes.—"W. N. B.," Sangamon Co., Ill. In the *American Agriculturist* for Nov., 1876, was described and illustrated, a tube made for drawing the milk from hard milking cows, or those whose udders or teats are diseased. We give herewith a second illustration of this milking tube, which shows correctly how the slide should be placed so as not to irritate the inner part of the teat. The tubes are made of silver, by George P. Pilling, 701 Chestnut St., Philadelphia.



750 Original Engravings for $1.60, or less.—At least 750 well executed, well printed engravings, of an instructive or pleasing character, will appear in the pages of this paper during the next 15 months. Many will be large; others, though small, will convey useful information about implements, convenient contrivances, valuable and ornamental plants, etc. Any new reader, subscribing for 1878 during this month, will get all these 750 Engravings, as well as a great amount of useful reading, for a single year's subscription price—at most $1.60, including postage, and less, where two or more club together, as noted on p. 326.

Coburn's Swine Husbandry, judging from the demand, is a book the farmers have been wanting. The work is a condensed presentation of our present knowledge on swine and all their belongings. The author is not so conceited as to suppose that what he does not know is not worth knowing, but has made use of valuable matter wherever it could be found, and he has given credit for it in a fair, open, and manly manner. We repeat that "Swine Husbandry" is the most valuable recent addition to our agricultural literature.

Sending Things.—Whether fruit, insects, plants, or other objects, are sent by mail or express, to be named or for whatever purpose, please mail, the *same day*, or before, a note concerning them. We have a lot of articles to which there is no clue, and are of no use.

Treatment of Splint in a Horse.—"L. H. P.," Salt Lake City. "Splint" is caused by a deposition of bony matter along the bones of the shank, almost invariably on the inner side. It is the effect of inflammation of the periosteum or covering membrane of the bone. The first symptom is lameness, and a peculiarity of this affection, is the low drooping of the animal's head when exercising. In the early stages there is heat in the part, tenderness, and a soft swelling. Then treatment may be effective. This consists of rest, the administering of purgatives, and application of cooling lotions. After the heat has subsided, blistering may be resorted to. When the bony matter is deposited, and can be felt or seen along the hollow of the shank, it is past cure. The disease is a counterpart of ringbone, only appearing in a different place.

Winter Oats for Feed.—"S. J. H.," Tuscumbia, Ala. The roughness of the upper end of the grain of winter oats, is not a serious objection to its use for horses. If there is any doubt about it the grain could be coarsely ground or bruised in a mill, then there could not be the least objection. The only possible trouble that could arise, would be when a horse should bolt the grain without chewing it, then the roughened beardy ends might irritate the intestines. Bruising or grinding would remove this danger.

Treatment for a Bruised Leg.—"R. N. C.," Morris Co., N. J. A swelling on the leg near the knee, caused by a kick, which does not readily disappear, may be treated with iodine ointment rubbed on to it three times a day. It is probable that an effusion of serum has occurred through inflammation of the membranes. This must be absorbed as soon as possible, lest it form a thickened fibrous deposit, which may become permanent. If it does not disappear after several days' treatment with the iodine ointment, the advice of a veterinary surgeon should be sought. It might be dangerous to trifle with it, as it is located near a joint.

Winter Oats.—"E. H.," Greenville, Tenn., writes in regard to winter oats: "This crop is now pretty generally grown in the mountain section of East Tennessee, and in some neighborhoods has been cultivated as a distinct winter crop for over thirty years. It has become quite as hardy as winter wheat or rye. The last winter was one of great severity; large peach trees and vineyards were destroyed by the cold, and many supposed our winter crops would be frozen out, yet they were not, and the winter oats stood the winter better, if anything, than the less hardy varieties of wheat. Those who ordered seed from the Agricultural Department, and from here, as a general thing, did so too late. This crop must be put in early, so as to give ample time to mature a good stout root and top before cold weather sets in; August and September are none too early to sow. The crop is very generally used for a late fall and winter pasture for calves and small stock. The yield of winter oats is fully double that of the crop sown in the spring, has no rust or smut, the stalk from its slow growth is stout, and it rarely falls down or lodges. The husk of the grain is thin, and the grain plump and large. Taken in all its qualities, it is one of our most valuable crops."—[It would doubtless be a wise thing to experiment in a small way with these oats. If they will be found to resist the cold of our Northern and Western winters, this will be a valuable addition to those fall crops we now have. The value of this variety of oats is fully established in the Southern States, where it may furnish much needed pasture or fodder. The hint about early sowing should not be neglected].

Fanning Mill for Cleaning Grain.—"A. S. S.," Petersburg, Va. The fanning mill you refer to, is probably that which is made by a manufacturer at Racine, Wis., and was referred to in the *American Agriculturist* of August, amongst the notices of catalogues received.

Disease in Pigs.—"I. M. P.," Buchan Co., Iowa, Diarrhœa and vomiting are symptoms of bilious disorder, such as the so-called "hog cholera." This is much more easily prevented than cured. The proper mode of treatment depends very much upon the previous management, or mismanagement of the animals. A mixture of sulphur, or copperas and charcoal, in equal parts, has been recommended, and found both preventive and curative. A tablespoonful of the mixture is given at a dose.

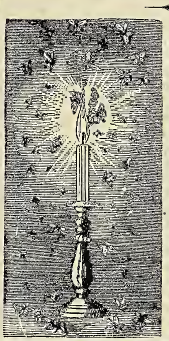
Impaction of the Stomach, "Dry Murrain."—"G. F. C.," St. Joseph, Mich. This disease is fatal if neglected, as it soon disturbs the nutritive functions, and the blood becomes disorganized. Indigestion is the cause of it. On the first symptom, which is a sleepy, dull, listless condition, with torpidity of the bowels, and constipation, pint doses of linseed, sweet-oil, or lard, should be given. Injections of soapy water are useful. Bleeding is to be avoided as dangerous. When the symptoms are aggravated, and the animal refuses to move, the case is serious. Then copious drenches of water sweetened with molasses, and strong purgatives of Epsom salts dissolved in plenty of warm water, should be given. Alternately with the sweetened water, an ounce of carbonate of ammonia dissolved in a gallon of water, may be given twice a day, if the animal needs a stimulant. The copious watering is needed to dilute the dry contents of the stomach.

Making Phosphate.—"W. W. M." If we were to give advice to those about to make phosphate, we should say "don't." The operation is very risky and disagreeable. Having tried it once, we would pay double price for the ready made phosphate rather than make our own. Good, pure superphosphate can be bought so low, of any of the respectable dealers whose names are found in the *American Agriculturist*, that it is not even economical, even were it safe and easy, for one to make it himself from the materials.

Treatment for Hog Cholera.—"D. W. D.," Madrid Bend, Ky. To give the different courses of treatment for the prevention and cure of the disease known as "hog cholera," would occupy more space than we could spare, when there are other means of procuring the information wanted. This can be had in full in the new work on Swine Husbandry, by F. D. Coburn, of Pomona, Kansas, published recently by the Orange Judd Co., price $1.75, free by mail. No swine breeder or feeder should be without this book, which contains all the information of value about swine, their feeding and general management when well or sick, that can be gathered from the most trustworthy modern sources.

Culture of Corn in Drills.—"S. G. W.," Gentry Co., Mo. There need be no difficulty in growing corn in drills instead of check rows, if the proper implements are used in the most effective manner. The seed may be dropped with the ordinary two-row planter, the usual distance apart for the row, but not so far apart as usual in the row. Thus rows 3½ or 4 feet apart, and the seed placed 2 feet apart in the row, would be a very good method. The plants may be thinned out to two stalks to a hill. When the corn is up, or before this, the ground should be harrowed with a Thomas harrow, which does not injure the plants. The system of cultivation in drill planting, is to destroy the weeds in the germ, and let none escape to grow strong. As soon as the rows are well up, they are worked with some implement which cuts close to the corn. The Perry Scarifier, or the Shares' Horse-Hoe, we have found very effective for this. The ground is worked frequently, not waiting until it is weedy, to begin to cultivate. It is necessary to cultivate early and often. We find this method less troublesome and more profitable than the check row plan.

Sundry Humbugs.



The object in exposing frauds of various kinds, and the rules by which we are governed, have been stated so frequently and so explicitly, that we might suppose they would be generally understood. Notwithstanding all this, a letter every now and then shows that our objects and methods are misapprehended. Here is one from New Jersey, which says: "Will you please write and let me know what your rates are for advertising humbugs and swindlers in your paper. *** If your rates are not too high, I would like you to advertise a firm for me, who have swindled me out of $16 or $17," and the writer then goes on to give a history of his case. We have stated, and must now repeat, that the exposures in these columns are made solely to warn our readers against fraudulent designs, and that they can not be used for any other purpose. If one has been swindled, he naturally feels a desire to somehow "get even" with the swindler, and if he can not recover his money, he can at least have the satisfaction of exposing the rascal in print. The writer of the letter quoted above says, that he threatened the swindler with

EXPOSURE IN THE AGRICULTURIST,

and we occasionally hear of similar threats made by others. While we have no hesitation in exposing any fraud—no matter what the position of the author of it, we try to bring common sense to the management of the matter. Being perfectly disinterested, we often see a transaction in a different light from the party concerned, and it is not rarely the case that the complainant is as much to blame as the party complained of. As in making the publication, the responsibility falls upon us, we must be the sole judge of the nature of the evidence presented, and of the propriety of making the exposure. Take the case already referred to: we are requested to publish so and so as swindlers; the transaction is stated, but not a single letter or other document is given in support of the statement, but we have only the word of a party personally unknown to us. We do not doubt the writer's good faith and honesty in the least—simply the evidence is not sufficient. We would say to our New Jersey friend and to others who ask the question, that no money can purchase an insertion in these columns, and we must be convinced that the public will be benefited by a publication, and that the evidence is sufficient to warrant it, before we can publish any one as a humbug.

SWINDLES UPON FARMERS

are rather more numerous this season than usual, and they seem to be much after the style of the "Spring Bed Swindle" described last month. Instead of spring-beds, some chaps in Illinois have played the same game with a new kind of wire fencing. The plan is to offer to give the farmer 50 rods of the new fence, if he will put it up along the road where it will be seen, and serve as an advertisement, and the farmer is to have the sole agency for the town, and be paid a handsome commission upon all orders he may take. The farmer accepts the proposal, and the agent tells him that it will take two coils of wire, for which the farmer willingly signs an order. In a few days a stranger comes along to collect a bill for wire fencing, and wishes immediate payment. The farmer explains that he put up the fence as an advertisement and was to have it free. He is told that he was to have 50 rods free, but he has ordered outright 150 rods, and must pay for this at four cents a foot. If the farmer is timid, he settles with the chap somehow, perhaps gives his note for $100, to pay for the wire he did not order. When he comes to examine his wire, he finds that he has 200 rods of wire, which will only make 50 rods of fence, four strands high, and in due time learns that his note has been discounted at the bank in the nearest town.

THE LIGHTNING ROD SWINDLE,

though so old, and so often exposed, is far from killed; the latest accounts come from Ohio, where the same old game is played. The Lightning Rod man proposes to appoint the farmer an agent, and he offers to put rods upon said farmer's house, to be paid for out of the first job that the farmer-agent may bring "the company," and holds out such inducements that the farmer agrees. To make it all straight, L. R. man gives the farmer a signed agreement to put up the rods, within 60 days—there is nothing like doing business in a business-like way—and the farmer is requested to sign a receipt for this agreement. It is the old story—another chap comes along to collect a bill for $180—the cost of the rod on the farmer's building, and if he demurs, there is his name signed to the order,—old, but too often effective....The success of frauds of this kind depends upon the representations of the profit that may be made. If a farmer is attending to his own business properly, he has no time to engage in outside speculations, especially those about which he knows nothing whatever. It will be noticed that almost every swindle of this class—the spring-bed, the wire fence, the lightning rod, etc., is clinched by

THE FARMER'S SIGNATURE,

and though we have frequently urged upon every one to "be careful what you sign," the injunction is still needed. Indeed, it will be a great deal better not to sign at all. Those only, who do not listen to, or tolerate any of these chaps, who infest the country east and west, north and south, are safe....Another, and a

BRAND NEW SWINDLE,

comes from Illinois, and this appeals more directly to his wife and daughters than to the farmer himself. A peddler comes along with laces and other fine goods, which he offers at such low rates that the good woman can not resist the temptation to buy, and the peddler goes off, leaving them happy over their great bargains. In a day or two, two men drive up, and show a printed hand-bill, giving an account of the robbery of a store. The supposed robber is known to have stopped at the house, one of the men claiming to be the store-keeper, recognizes the goods bought of the peddler as a part of those he has lost, and especially if there is no man at hand to prevent, they seize and carry them off....A correspondent in Iowa is very indignant at having received a circular from some phrenologists, which proposes if he, the recipient, will send a profile view of his head and five dollars, they will send a description of the character of the individual, giving directions as to "the future development

NECESSARY TO SUCCESS IN LIFE,"

and asks us if this is not "a mean humbug that ought to be ventilated." To answer this correspondent would open the whole question of the truth of phrenology, which we do not propose to discuss. If denouncing it as a humbug or delusion would kill it; phrenology would have been very dead, years ago, yet it seems to survive in spots, and many well-meaning persons actually believe in it. While we have our own opinion on the so-called "science," we can not see that the case is one that comes under the head of fraud. The phrenologist offers to furnish, under certain conditions, his guess at a man upon examining his portrait. There may be a difference of views as to the value of such an opinion; if any one wants it, the price is named, but no one is obliged to buy at that or any other price *We* would not buy....New York had at one time a matrimonial paper, but as we have seen nothing of it for a long time, we infer that it has gone the way of all such things; but Philadelphia is not without a

MATRIMONIAL ADVERTISER,

a little sheet called "Fortuna," of which the 1st and 2d numbers have been sent us. Its heading states, "Containing Information for all who are desirous of Marrying." We infer that business must be dull, as there are only 9 "Cards from Ladies," while there are 11 "Cards from Gentlemen." Very funny reading they are. A young lady of genteel appearance and $150.000, ought not to wait long for a taker. A widow with six children, weighing 156 pounds, has a lager-beer business, which brings in $2,000 yearly, and wants a man to look after the business. One can not help wondering if these are *bona fide* offers—yet as there are matrimonial agencies in large cities, which have been in operation for many years, we suppose there must be cases in which husbands and wives are traded for like horses, cattle, and provisions. ....The circulars of what purports to be the "Finance Committee of

THE LOUISVILLE LOTTERY ASSOCIATION"

continue to come from all quarters. It is alleged that in settling up the affairs of the "Company," there were $94,000 in undivided prizes. Some how this was invested in watches and things, and a second drawing made on behalf of the ticket holders in said lottery. Circulars are sent out informing individuals that their "joint interest in the Louisville Lottery Association has resulted in your drawing a "——there is after this a blank to be filled in with ink, and in the numerous circulars that have been sent us, this is filled with "Gold watch and chain valued at $150." Then the individual is informed that "the 10 per cent assessed on all prizes, makes the amount due on your prize $15," and that by sending this amount to Russell & Co., N. Y., they will forward the prize. We have had numerous letters regarding the matter, some asking us to get the watch, sell it at near its valuation, and forward the balance, taking pay for our trouble, and do various other things that are quite out of our line. Others ask our advice, or our opinion in the matter. We have in former numbers, and often, expressed our opinion as to lotteries of all kinds. Holding, as we do, that they are wrong in principle, and do a vast amount of harm, we can not consistently aid and abet in procuring prizes, or in acting as agents for those who choose to have dealings with them. Looking at the matter on general principles, we judge that those who send out these circulars do it to make money. They do not anywhere state what is the cost of, or the real value of, the watch, but state that it is "valued" at $150—a very easy thing to do. They propose to send a watch on payment of $15. If any one supposes that the "Louisville Lottery Co.," or any one else, will send them any more than fifteen dollars worth for $15—he has a confidence in human nature that is likely to be disappointed. Our advice is to let lotteries in all their manifestations and developments severely alone, and our opinion is that *this* one is an ingenious scheme to make money. We are very sorry to say that some of the letters relating to this matter have given a glimpse of the

WORST SIDE OF HUMAN NATURE.

These circulars profess to be addressed to those who held tickets in, or had an interest in, the Louisville Lottery. Some have admitted that they had no such ticket, but if a watch worth $150 could be had by paying $15—they were willing to have us get it for them. The moment one who has had no interest in such a lottery reads that his "joint interest has resulted" so and so—he knows that it does not concern him, and whatever may be the character of the scheme and its promoters—he has no moral right to avail himself of whatever alleged advantages may follow....A correspondent in Illinois complains of an

ADVERTISED REMEDY FOR CORPULENCE,

advocating the use of some sea-weed, the taking of which will cause leanness. Our friend invested, but regards himself "a victim," for, as he says, if one will follow the system of diet and exercise recommended, he will get lean without the use of the sea-weed. Our friend has discovered the secret of many of the medicines that are taken, and of various external applications. Several years ago there was a popular hair remedy; in its use the head was to be brushed for 15 minutes before applying, and for the same time afterwards. It was really the friction that was useful. So with various remedies that can only have effect if the patient abstains from stimulants of all kinds, pepper and all other condiments, bread of fine flour, and many other things. The medicine, to be taken in carefully measured quantities, at closely observed hours, amuses the mind and gets the credit, while the *diet* does the work.....Several months ago we noticed a circular from a man in Cincinnati who practises what he calls

VITAPATHY,

and as we could not show up the absurdity of the thing so effectually in any other way, we quoted from his pamphlet, with some running comments. Vitapathic man did not like it, and wrote us to the effect that we should investigate it, as it, Vitapathy, was to be a great benefit to the human race. He now sends several copies of a new edition of his pamphlet. Prof. Carpenter, of London, the renowned physiologist, in one of his works, speaks of people who are unconsciously self-deluded, and illustrates by the case, among others, of a "water-witcher," who really thought he had the power to discover water by the use of the divining rod. This vitapathic man may believe what he prints—but what a capacity for credulity he must have! The first page of this precious document (which on the cover he begs us to "Read it to our Family"—not to excess,) tells us that

"THE VITAPATHIC SYSTEM

commences with the beginning of things—ascertains what is life, its nature, its power, its source and extent, what it is, what it does, and how it does it, and how we are to use it to accomplish all things and make it a panacea for all diseases, and for death itself." There is page after page of stuff in a similar strain, including a "Vitapathic Marriage Ceremony," and a "New Vitapathic Remedy" for Hog Cholera! If the man believes the stuff he has printed, his friends should kindly care for him; if he does'nt believe it—then he is about the most arrant humbug amongst all the many that we have had the misfortune to know of.

◆

Portable Poultry House. Egg Carrier.—Some time ago we received a letter in reference to a portable poultry-house, and a very promising egg carrier, from A. R. Sprout, Picture Rocks, but where the Picture Rocks are situated there was no clue. Consequently we could not write, as we wished, to ask for drawings of the poultry-house. We should be glad to have them. Will Mr. S. write with full address in reference to the egg carrier.

An Honor for Col. Waring.—Col. Geo. E. Waring, Jr., Newport, R. I., has been elected a member of the Royal Institution of Engineers of the Netherlands. As there are only six other members besides the Royal and other officials, this is regarded as a distinguished honor. The services of Col. W. in relation to the exhibition of the plans of the public works of the Netherlands, at our Centennial Exhibition, and his writings upon Holland and its great engineering works, are assigned as the reasons for bestowing the honor.

Some Remarkable Individual sends a notice of a "National Convention" of Bee keepers, to be held in New York in Oct. The date is not given, but that is no matter, and no name is signed, and that shows that there is just one person now alive who supposes that we are stupid enough to notice a meeting of which he is so ashamed that he will not connect his name (providing he has one) with it.

Artificial Switch for a Cow.—Mrs. "D.," Cumberland, Md. It is very difficult to fasten an artificial switch on to a stump tail cow, as it will either slip off when moved violently, if not fastened tightly, and if tightly strapped on, it will hurt the stump. We never knew any substitute for the natural tail to be of any use. We suggest covering the cow with a net or cotton cloth, such as is used for horses, or to sponge her with carbolic soap suds, leaving it to dry upon the skin.

To Preserve Horse Manure from "Fire-Fang."—"T. J. C.," Painesville, Ohio. Horse manure may be kept perfectly well until thoroughly decomposed, by piling it in thin layers with earth intermixed alternately. The heap should be wide and flat, and made hollow to catch the rain. The fermentation is slow, and all the gasses are absorbed by the earth.

Books on Cattle, Sheep, and Pigs.—"H. F. N.," Mandarin, Fla. The best available books on the subjects mentioned, are Dadd's American Cattle Doctor, price, $2.50. Stewart's Shepherd's Manual, $1.50. Coburn's Swine Husbandry, $1.75. Stonhenge on the Horse, $2.50. An Egg Farm, by Stoddard, 75 cents. The nearest breeder of Short-horns to Florida, known to us, is Richard Peters, Atlanta, Georgia.

What Crop on a Poor Stiff Soil.—"T. B. P.," Goldsboro, N. C. It is useless to expect a profitable crop of wheat, corn, or oats, without manure, on a soil run down by the constant planting of cotton. Perhaps as good a plan as any, in this case, would be to plow the soil thoroughly, harrow well, and sow down to winter oats, with 200 pounds superphosphate of lime per acre. To pasture the oats in the spring, would probably be the best plan, and afterwards plow in time to plant corn, using a handful of either the Mapes or Bowker's corn fertilizer, scattered around each hill just before the first hoeing. The field might be sown with peas when the corn is laid by, and these plowed in for a crop of rye, with which the field might be seeded to clover in the spring. After the second year corn might be taken again, then winter oats seeded with clover, and so on. By and by, doubtless, the land can be profitably sown with wheat.

The Echo Farm Herd.—From a necessarily hurried visit to the Jersey herd at Echo farm, which was described in the *American Agriculturist* of August, we were led into an erroneous supposition that "Pride of the Village," one of the cows mentioned, was sired by Litchfield, and was one of the herd exhibited at the Centennial. We are informed by the owner of the herd, F. Ratchford Starr, that our statement to the above effect was not correct. We therefore make the needed correction. We do not consider, however, that this detracts from the merits of "Pride of the Village," which we judge to be one of the choicest animals of the herd.

Draining.—The present season has made it evident to hundreds of farmers, that money or labor spent in draining upon low grounds, is a profitable investment. We have seen many pieces of corn, either parts of fields or whole fields, that are now much injured by too much moisture, and the loss in many cases is equal to what would be the whole cost of the needed drainage. Now that fields are being prepared for wheat, there are some that are either too soft in low spots, or are hard and lumpy, being more like baked mud than arable soil. Had these been drained, this defect would not have hindered work, nor have prevented the wheat from being sown in the best manner. The crops of the past season will bring more money than usual into farmers' hands ; it would be a good thing to put some of it into such permanent improvements as draining, by which the value and productive power of the land may in many cases be doubled.

A Useful Grange Meeting.—Our remark, made at the outset of the institution of Granges, to the effect that in time they would most probably develop into useful "Farmer's Clubs," as these meetings are generally understood, is exemplified by the proceedings at a meeting of the Palmyra (N. Y.) Grange, held on July 21st. Samples of wheat were exhibited, the best of which were of the Post and Clawson varieties. Specimens of currant jelly were shown, made by squeezing the juice from ripe currants, and adding to it an equal quantity of white sugar. The mixture was then brought to a boil, and boiled only 5 minutes. Others were made without boiling, by exposing the sugared juice for one day to the heat of the sun on a tin roof. Samples of fruit, including a new seedling cherry ; conversations about qualities of different wheats, in which the red wheats were chiefly recommended, and regarding a Fire Relief Association, also helped to fill up the time of the meeting. Here was a practical and useful way of occupying time which, however, scarcely needed the costly formalities of a Grange establishment ; but if this was a necessary condition for such a meeting, there is then a good excuse for it.

Poisoning by Paris Green—Antidote.—"W. F. H." asks, "What to do in case of accidental poisoning by Paris Green."—Paris Green is so deadly a poison that the utmost care should be taken to prevent accident, and every one should know what to do in case poison has been taken into the stomach. There is but one tolerably certain antidote, the freshly prepared *Hydrated Peroxide of Iron*, or *Ferric Hydrate*. This cannot be kept on hand long, as it soon changes and becomes inert. All well managed drug stores keep on hand the means of preparing it at once. In case of poisoning by Paris Green or any other form of arsenic. give an emetic. Mustard is always at hand ; give two tablespoonfuls of *Ground Mustard* stirred in a quart of luke-warm *Water*.—Drink freely, tickling the throat with the finger to induce vomiting. When the stomach is emptied, give *Calcined Magnesia* in tablespoonful doses, stirred in milk, repeating every 15 minutes. When the vomiting ceases, give a large dose of Castor Oil. But send first to the nearest physician, and also to the nearest apothecary for *Hydrated Peroxide of Iron ;* the doctor will want it ; if he is not present, give it in tablespoonful doses every 10 or 15 minutes until the patient is relieved. It is in the form of pulp like Indian-red paint. No harm can come from giving too much. When the doctor comes, follow his directions.

The Great Value of Ashes, Leached and Unleached, and the reasons therefor, are pretty fully discussed by Prof. Atwater, on page 330. It will be worth while for all to read the article. Those using hard coal, use more or less kindling wood, producing good ashes; and the hard coal itself having been originally from plants, supplies a little potash, etc., though the greater heat melts and vitrifies the alkalies so much as to render them not immediately available to plants. We have seen good results even from hard coal ashes, though as a rule they make such excellent covering for foot-paths and roads, that they are most useful for this purpose. They are well worth preserving for one or the other of these uses. We have materially improved the *texture* of a heavy soil by a free application of them.

Machines for Cleaning Grain.—"J. H. P.," Armstrong Co., Pa. Various kinds of fans or windmills, for cleaning grain and seeds of all sorts, are made by many of the manufacturers whose notices are in our advertising columns. These parties will be happy to send catalogues of their goods to any one who asks for them. See also notices of various catalogues mentioned nearly every month. If these notices and advertisements were examined regularly by those in need of anything whatever, the desired information would be almost certainly found. There is no more comprehensive list of useful articles to be found anywhere in print, that we know of, than the advertising columns of the *American Agriculturist* throughout the year. They are worth reading, if only for the varied information they give.

Pasturing the Highways.—One of the greatest nuisances of rural localities is the pasturing of stock upon the roads. The road is the private property of the owner of the land on each side of it ; he gives only the right to use the land for travel to the public. In law, when this use is no longer exercised, the land reverts to the owner. The grass, fruit, trees, etc., growing on the road-side, are the property of the owner of the soil, and not of the public, and he may plant his garden there, if he does not interfere with the conveniance of the public in passing to and fro upon the road. No man then should use the roads for pasturage. No one has a right to do this; and when cows are permitted to graze upon the road-sides, they may do much damage, by entering gates that may be left open, and destroying garden and field crops. Localities, in which the roads are made common pasturage, are to be avoided by all persons seeking new homes, for whatever the attractions of a place, this nuisance would neutralize them all, and leave a large balance on the wrong side.

"Snow-hill Durhams."—"W. V. C.," Troy, Ind. There is no breed of cattle of the above name. The Durhams are the Short-horns, as they are now universally known. Various breeders, who have carefully kept up a strain, frequently name their herds in the manner referred to, and there may very probably be a herd so called, which we do not remember.

Go the Fairs—Why ?—"Fair" is not just the word for our autumn shows—"Exhibition" would be better—but the word has come by use to mean exhibition, when it don't mean a "horse-race" exclusively. We say, go to the fairs. Just as reading other's thoughts enlarges and stimulates one's own thinking, so contact with other men, seeing what they do, what they show, asking how they produced this or that good thing, can not fail to afford some new hints and do one good. A day at the fair lifts one out of daily drudgery ; the sight of so many people engaged in the same calling, helps one out of that low view which the great mass of farmers set upon their own pursuit. However much farmers may talk of the dignity of their calling, there is in their hearts too low an estimate of it. If a son goes into a store, or a daughter marries a merchant, or professional man, they will speak of it as something to be proud of. This is wrong. Agriculture, from Adam down, has been and is the noblest pursuit. Going to the fair will help in this and many other ways. Go early in the day, and have a quiet look at things, before the horse-races disturb the general and good order of the day.

Clothing.—A Great Convenience, as well as economy, for a multitude of people living remote from business centers, is afforded in the present improved plans of sending out cloth samples with prices affixed, adopted by some large dealers, so that any one can examine the fabrics *at home*, know the cost of any garment, and have it forwarded directly to them. The carriage by the mails of parcels of not over 4 lbs. at the cost of a cent an ounce, or 16 cents a pound, brings a store to one's own door. (We remember sending a silk wedding dress by mail, a few years ago, to one of our subscribers in the interior of Kentucky, which cost 96 cents a pound for postage, and even then it gave great satisfaction). Those wanting men's garments are referred to the advertisement of Foote & Richardson, page 349. Letters from our readers who ordered of them during the summer, express great satisfaction with the result.

Basket Items continued on page 353.

A Hundred Per Cent Interest!

"G. W. M.," writes from Iowa: "... Some talk about their good luck in receiving 20 per cent, or more, for a little money invested. I can tell how I got not only 100 per cent for an investment, but many times that, and I believe hundreds of thousands of others can do the same. During five years past, I have bought, at a total cost of $34.25, eighteen books on farming and gardening, stock-raising, and fruit-growing, including one volume on farm buildings, one on drainings, and one on housekeeping, (Youman s Household Science). I have read these, about one in three months ; my sons have read them ; my neighbors have borrowed and read them, and there they stand in a neat row on a shelf, always ready not only for reference, but the finest ornament we have in our humble dwelling. We feel proud of them ; they give an air of intelligence ; we feel our dignity as a reading family ; my sons talk intelligently, and they insensibly appreciate a calling that has even 18 books treating of it. They don't talk about leaving the farm for a 'higher calling.' When at work they talk about what such and such an author says. I know they are happier for it. In these respects I know the books have paid *a thousand* per cent. That $34.25 would buy one small animal, or a cheap set of furniture, but none of my family would vacate that book shelf for a dozen of animals. I will not pretend to say how much good these books have done among our neighbors, in elevating their tastes and their dignity, as well as in giving useful information—how much scandal has been avoided, because the readers of the books have something to think and talk about, gathered from these books ; how many demoralizing 'novels' have not been read because these books took their places. There are fewer candidates among *our* farmers' sons for city life, where,as we know, 95 out of every hundred fail to succeed.

But there is another paying side to our library. During these five years we have saved at least ten animals, from a chicken, pig, sheep and cow, up to a valuable horse, by the use of the knowledge we got at once from our little library. I can see well, where by hints, suggestions, new thoughts, avoidance of errors, etc., which have come to me through reading the seven thousand pages in these 18 books, of other men's experiences and operations, I have myself planned my work, my sales, my implements, etc., more profitably. No, I would not be without their benefit to myself and family for a hundred times their cost. I wish I had got twice as many such books, twenty years ago. I send you a list of what I have, and want your advice what to get more, to the value of $40 this fall. I did not cultivate that extra 'Book Acre,' we had not an extra acre left, but my second son has some pigs that will bring about $40, and he says 'we will put the money in new books, on another shelf, to be mine, and when I go on a farm I will take them for my house, and we can all read them until then.'—I have written this to re-inforce what you have often advised. If my brother farmers could see the advantage of such books, as I see it, and *know* it, there would not be a farmer's cabin or mansion in all the land, without at least a small farm-book library right off....."

Being Familiar with Our Readers.

The rule of this office has always been to consider the Readers, the Editors, and the Publishers also, as holding a sort of *family relationship*, with *mutual* interests to be guarded and promoted. What helps, aids, removes difficulties, or otherwise benefits our readers, young and old, should give, and we believe *does* give, the highest satisfaction to the Editors. If an objectionable or doubtful advertisement is offered, with ever so much money tendered to get it inserted in these columns, (for such advertisers offer big prices,) the Publishers should not, and we believe do not, look one moment at the profit, but how will it affect the readers. If they had no kindly feelings, no thought but how to make the most money, yet, if wise men, they must see, that, in the long run, honesty is the best policy ; that if they fill up the business pages with things that will be unprofitable to the readers of ordinary judgment, they will by so much diminish the value of such pages to good patrons, and in the end lose by it. (We heartily wish all publishers, even of some of the "religious papers" could, and would, take this view of it. How many tons of worse than useless—of death and disease introducing medicines—would fail to find a market.)

On the other hand, we believe our readers generally appreciate this family relationship, and that they take an interest in the Editors' and Publishers' plans. So we do not hesitate to talk familiarly in the reading pages, of the plans, the offers, the business arrangements, etc. Sometimes a reader will object to these business talks—that there is too much of them, etc.—but we believe the great multitude of our readers are rather pleased than otherwise, with plain talk—with our telling our plans and purposes familiarly. We like to have them do so with us. If any of them have big crops, fine farms, prosperous circumstances, we like to hear of it, and rejoice with them, even if we do not find room to put it down in print.

Bee Notes for September.

BY L. C. ROOT, MOHAWK, N. Y.

During the present month, if the weather is favorable, we may reasonably expect a fair yield of fall honey. Golden Rod will be in bloom very freely in most parts of the country. Partly filled boxes, that are not too much rounded and finished, may be completed. Those that are rounded over and sealed on the edges, should be removed. There is a large proportion of such boxes at this date (Aug. 6th), owing to the sudden cessation in the yield of white honey. It is seldom advisable to place empty boxes upon hives so late in the season, expecting them to be filled. It would be better to take the honey from part of the combs with the Extractor, and let the bees refill them.

Questions and Answers.

Bee Forage.—"What trees would you advise planting as affording best forage for bees ?"—I think the native Basswood is best, as it matures rapidly and yields very abundantly. It is sometimes called Linden, and is found in abundance in many States. It blooms in Central N. Y. about July 15th, and the honey is of the finest quality.

"Stock and Swarm."—"What is the difference between a stock and a swarm of bees ?"—We usually speak of a swarm of bees as it issues from the hive, or as taken separately from the hive, while a stock is spoken of as including hive, combs, and bees.

Returning first Swarm.—"Do you think it advisable to return a first swarm when an increase in swarms is not desired?"—This is a good, practical question, and the entire space given to the "Notes" might be profitably used in answering it. In my home apiary about one-half of my hives are boxed, and the rest are extracted. Those extracted seldom swarm, no matter how populous. When a swarm issues from a stock that is boxed, I remove part of the combs filled with brood, and after removing all the queen cells from the remainder, fill the place of those taken away with empty frames, and return the swarm. In most seasons this will prevent further swarms, if plenty of box room be given. The combs of brood removed may be given to lighter swarms for extracting.

To make Bees Work in Boxes.—"How can I induce my bees to work in boxes?"—Fasten pieces of white comb in each box, and if strong with bees and plenty of forage, there will usually be no trouble.

Swarms going Back.—"One hive of bees has attempted to swarm four different times, and each time returned to the old hive. What was the cause?"—Without doubt the old queen had a poor wing, and being unable to fly, returned to her hive, when the bees returned with her.

Non-swarming Bees.—"My bees collect surplus honey, but do not swarm. Why is this?"—Bees often gather so much honey early in the season, and the combs are so filled with it, that space is not left for a sufficient amount of brood to be reared, and, in consequence, colonies do not become populous enough to swarm. In such cases, the Extractor for emptying the combs is invaluable. In other seasons stocks may be very populous, and a lack of honey will hinder swarming.

Straight Combs.—"How can I manage to secure straight combs in my frames?"—If a frame or two filled with combs were placed in each hive, they would assist in securing straight combs. Recent experiments impress me that the comb foundation, which is being largely manufactured, may prove serviceable in this direction.

The Best Hive.—"All things considered, which is the most desirable hive?"—I use the "New Quinby." Would change, if I knew of a better one.

Alsike Clover.—"Will this alone produce a good crop for stock?"—Not the best. If I were to carry on farming in connection with bees, I should sow it each year, as it yields honey abundantly and of a fine quality. It does not stand severe winters well.

Time for Putting on Boxes.—"Does it make any difference in the amount of surplus honey, if the boxes are put on before the bees have filled the hive below?"—Yes, if a card of brood be placed in the hive when the bees are put in to keep the queen from entering the boxes, and the yield of honey be good, I would put boxes on at once. If the brood is not furnished, I would put boxes on in a couple of days.

"Do Bees need Salt?"—It is not essential to them.

Science Applied to Farming.—XXXIII.

Wood Ashes, their Composition and Uses as Fertilizers—Ashes vs. Phosphates and Guano.

I had quite a talk with a farmer friend in Vermont, recently, about ashes and phosphates as fertilizers. He had been using both, the superphosphate, of good quality, costing about $50 per ton, while fresh ashes could be had at 12 to 15 cts., and leached ashes at 10 to 12 cents per bushel. He was in doubt as to whether the phosphate paid, but was quite certain the ashes were profitable. I thought the ashes cheap and the phosphate dear, and advised him to use the ashes, and very freely. I believe practical experience and correct theory justify this advice.

Very common experience shows that wood ashes are an excellent, reliable, and lasting fertilizer. Hundreds of farmers will recall places where a brush heap or an old log has been burned, and a luxuriant vegetation has followed and lasted for years. In this section it is an old saying that "the land never forgets ashes." Many of our best farmers in Connecticut use leached ashes, imported from Canada, at a cost of from 18 to 28 cents or more per bushel, in preference to all other fertilizers except barn-yard and stable manure. Mr. T. B. Wakeman, of Westport, one of the most successful farmers in the State, says:

> "The farmers here have used ashes for more than thirty years; the cheapest manure we can buy. Over [illegible]0,000 bushels were sold here last year, besides 400 tons of bone, which is next to ashes as a fertilizer. We know that ashes and bone-dust pay, and more than three times over. We can put that down as a fact, and prove it, too. If any one doubts it, will call and see our crops, when growing, he will admit its truth."

This good effect of ashes is very easy to explain. The trees from which they come subsist in essentially the same way as the cultivated crops. Both require the same materials for food, though in somewhat different proportions, and obtain them from the same sources—atmosphere and soil. The ash that is left after the wood is burned, includes, practically, everything that the tree took, and the plant requires, from the soil, except nitrogen, and the ingredients are in very available forms. Further, while the ashes do not supply nitrogen themselves, they are very active agents in rendering the nitrogen of the soil available to crops. Our ordinary soils contain this precious ingredient largely in excess of the needs of the crops. But the larger portion of it is in such forms that plants can not appropriate it for food. This is the case in partially decayed vegetable matter, as roots, stubble, humus, etc. Ashes induce chemical changes by which the nitrogen is rendered available. They do the same for the other soil ingredients of plant-food also. In the fragments of minerals and rocks contained in every ordinary soil are locked up stores of potash, lime, magnesia, phosphoric acid, and so on. The ashes liberate these, and work them over into forms fit for the support of plants. These changes of plant-food from inert to active forms, are going on in the soil all the while. It is in virtue of these processes that our soils are enriched by tillage and fallowing. Ashes, by accelerating these changes, enable the soil to feed the crops it bears more rapidly, or what is the same thing, more bountifully than it otherwise could.

Again, ashes may be useful as a mechanical amendment to the soil. On a portion of one of the fields belonging to my friend alluded to, ashes had been applied. On comparing this with an adjoining strip where no ashes had been used, a great difference in the texture of the soil, a somewhat sandy loam, was noticeable. Where the ashes were, the soil was soft and yielding to the step. We could run our fingers down into it several inches, and dig up large handfuls with ease. Where no ashes had been applied, it was harder and more compact, and it was with difficulty that we could force our fingers into it more than an inch or two. An acquaintance was telling me, recently, of some of the farming land in New Jersey that has been so wonderfully improved by the application of marl. He said he could tell the soil where the marl had been put, by the tread, when walking over it, even in the darkest night. The marl he referred to was somewhat similar in composition to leached ashes, and its application produced analogous effects.

And, finally, ashes are usually applied in large quantities. Of course, none of their constituents can escape into the air. The loss through leaching away in the water which percolates through the soil is very slight. They therefore remain, furnishing the crops with plant-food, and improving the condition of the soil for years, until they are themselves consumed. Hence their lasting usefulness.

Below are figures by Wolff, representing averages of European analyses (mostly German) of wood ashes. Analyses of ashes of peat and anthracite coal are also given, for comparison.

ASHES FROM 100 LBS. CONTAIN	Water.	Potash.	Soda.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.	Silica and Sand.	Chlorine & Fluorine.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Evergreen Trees...	5.0	6.0	2.0	35.0	6.0	4.5	1.6	18.0	0.3
Deciduous Trees...	5.0	10.0	2.5	30.0	5.0	6.5	1.6	18.0	0.3
Leached Ashes......	20.0	2.5	1.3	24.5	2.5	6.0	0.3	20.0	....
Peat..................	5.0	1.5	0.8	?	1.5	0.6	1.3	?	0.2
Anthracite Coal....	5.0	0.1	0.1	?	3.0	0.1	5.0	?	....

The above analyses of wood ashes differ somewhat from those of the ashes ordinarily produced in household and furnace fires. The percentages of phosphoric acid, particularly, are much higher than those of common wood ashes.[*] The amounts of phosphoric acid, as well as of some of the other constituents of ordinary wood ashes as obtained from household fires in this country, are illustrated by the following analyses by Prof. Storer.[*] Nos. I and II were "from soap boilers' stores," and, of course, mixtures of various kinds as gathered promiscuously from houses. The rest were carefully taken from stoves and furnaces in private dwellings in New England, except IX and X, which were from Illinois.

WOOD ASHES, (Unleached.) Sources, Kinds of Wood, etc. 100 *lbs. contain.*	*Potash.*	*Phosphoric Acid.*	*Carbonic Acid.*	*Sand and Charcoal.*
	lbs.	lbs.	lbs.	lbs.
Soapboiler's ashes.				
I.—Collected from Houses............	6.3	3.4	....	....
II.— " " "	6.1	3.0	....	....
From hot-air furnaces in houses.				
III.—Beech, Birch, and Maple, mixed...	10.4	1.5	25.4	5.9
IV.—Hard Wood, chiefly Oak...........	8.5	1.7	21.9	14.1
VI.—Rock Maple	8.8	2.0	28.7	1.3
From house stoves.				
V.—Mostly Red Oak. (open fire.).......	8.6	2.0	30.7	7.8
VII.—Maple and Apple....	8.4	1.8	....	....
VIII.—Beech..................................	9.5	2.8	....	....
IX.—Pin Oak, (green wood.)............	9.0	2.2	23.4	11.9
X.—Pin Oak, (dry wood.)................	7.4	6.7	20.3	5.1
XI.—Apple, (old trees.)..................	9.1	0.4	28.3	2.7
XII.—Pitch Pine..............................	10.8	4.2	....	....
XIII.—Alder....................................	6.8	2.3	....	....

Leached ashes differ from unleached chiefly in containing less potash and more water. Below are some analyses by Prof. Johnson.[†]

LEACHED WOOD ASHES. 100 LBS. CONTAIN	*Water.*	*Potash.*	*Soda.*	*Lime.*	*Magnesia.*	*Phosphoric Acid.*	*Sulphuric Acid.*	*Carbonic Acid.*	*Sand, Coal, etc.*
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Sample from									
Deer River, N. Y.	35.0	0.8	0.2	29.7	3.4	1.3	0.0	19.9	8.9
Canada..............	35.0	2.3	0.0	2[illegible].1	3.8	1.3	0.2	18.2	9.9
Canada..............	35.0	0.7	0.0	23.2	2.9	1.4	0.1	17.1	18.1
Soap Factory, New Haven, Ct.	35.0	0.9		21.[illegible]	4.1	1.1	0.1	20.2	30.7

From the above analyses and other data, which we have not room to discuss here, we may assume the following figures as expressing accurately enough for practical purposes the average percentages of the valuable ingredients of plant-food in wood ashes as obtained from household fires, or commercially, in this country.

Wood Ashes. 100 *lbs. contain on the average*	*Potash* lbs.	*Lime* lbs.	*Magnesia.* lbs.	*Phosph'c Acid.* lbs.	*Sulphuric Acid.* lbs.
Unleached....	7 to 10	32	5	2	1½
Leached......	1 to 2	25	3½	1½	1-5

A bushel of unleached ashes weighs, on the average, about 48 lbs. A "struck" bushel of leached ashes will average some 57 lbs., and a "heaped bushel" about 71 lbs. A dressing of 50 bushels of unleached ashes to the acre, at 48 lbs. to the bushel, would give some 200 lbs. of potash; 768 lbs. lime; 120 lbs. magnesia; 48 lbs. of phosphoric acid, and 36 lbs. of sulphuric acid. A manuring of 60 bushels of leached ashes, at 60 lbs. to the bushel, would furnish about 54 lbs. of potash; 900 lbs. of lime; 126 lbs. of magnesia; 54 lbs. of phosphoric acid, and 7 lbs. of sulphuric acid. Either of these would cost but little more, and, in many places, not nearly as much as an ordinary dressing of guano or superphosphate. The main value of the guano or superphosphate would be in the nitrogen and phosphoric acid it contains and supplies directly to the plant. The ashes would contain about as much phosphoric acid and would supply nitrogen indirectly, as explained above. In addition to this, the ashes would yield a large quantity of potash, of which the guano would contain little and the phosphate probably none, considerable magnesia, and a very large amount of lime. The guano and phosphate would probably be more rapid in their action, but their effect would soon be gone; while that of the ashes would last for years.

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[*] The reason of this is that the analyses refer more to the ash as prepared for investigation, by careful burning in the laboratory, so that all the phosphorus of the wood remains in the ash as phosphoric acid. In ordinary fires a good deal of the phosphorus of the wood is lost, by being volatilized and carried away in the draft, or changed to other forms of combination than phosphoric acid. Household and furnace ashes also contain considerable coal sand and other impurities, which do not occur in the samples prepared in the laboratory. Wolff's figures, above given, evidently make allowance for these latter contaminations, however.

[*] An exhaustive treatment of this subject by Prof. Storer may be found in the "Bulletin of the Bussey Institution of Harvard University," Vol. I page 191. See also accounts of composition and fertilizing effects of ashes in other parts of same work.

[†] From Report of Conn. Board of Agriculture, 1872, p. 417. The original samples varied in the percentages of water, but the analyses are calculated on a basis of 35 per cent, which is probably a fair average. The last sample had an admixture of anthracite coal ashes.

A word of practical application. Ashes are useful for any crop, from roots to fruit. On newly seeded grass land they often work wonders. They may be used as a top-dressing or put in the hill or plowed or harrowed under. They are excellent for composts also. Here in Connecticut, where guano, phosphates, fish, and the like, can be bought very cheaply, many of the best farmers prefer to use ashes, even when they have to pay twenty cents per bushel or more for the leached. And where, as in some places I know, guano costs $70.00, a good superphosphate $45.00 or $50.00 and bone about as much per ton, and ashes are only 10 to 18 cents per bushel, I should advise the use of the ashes by all means. Of course, for forcing early crops, guano, phosphates, and other quickly acting fertilizers, when used in small quantities, may pay better. But, generally speaking, at such prices as the above, ashes will be far preferable for a standard manure.

W. O. **Atwater**,
Wesleyan University, Middletown, Conn.

The Fairs the Farmers' Schools.

Hundreds of letters come to us yearly, asking about matters and things which are very fully exhibited at the Agricultural Fairs every fall. A farmer who observes the live stock, implements, machines, and other interesting objects at these exhibitions, and makes a study of them, will gain much valuable information. Those who attend the fairs, with their goods and live-stock, are pleased to have them seen and examined. It is their business to show what they have on exhibition, and we never yet knew one of them to give an impatient or churlish reply to any civil inquiry made of them; but on the contrary, have always found them eager to impart information. Now this information is precisely what every farmer wants. He needs to be instructed about the differences in character and value of live stock, the uses and working of implements and machinery, the value of improved grains and other products, the kinds of artificial fertilizers offered by the manufacturers, and scores of other matters, not only of great interest, but of value in his daily business. Then, farmers need to meet together and talk with one another about these things, and compare views. It is hardly possible for any two farmers so to discuss matters relating to their business without mutual benefit. The County or State Fair, is the place of all others for farmers to meet with one another, and also to meet those who provide them with implements and various other supplies. By all means let every farmer not only attend the fairs, but use all his faculties when there, in the effort to learn every thing that is possible. A fair is a great school for the farmer and his family.

Ogden Farm Papers.—No. 91.

BY GEORGE E. WARING, JR.

The subject of the escutcheon or "milk-mirror," as a test of the quality of the milch cow, is just now receiving much attention. Mr. L. S. Hardin has attacked Guenon's theory in a really savage way, and he has aroused quite a storm of correspondence, which is preponderatingly in its favor. It has been suggested that we do not need to adopt all the minutiæ of the theory, for we do not care anything about the comparative tests of third and fourth rate cows. The only ones we want are those of the *first* class, and it is a very simple matter to learn enough, to be able to see at a glance if any given escutcheon is first-class or not. We shall act wisely, as a rule, if we let all except the first-class ones go. We *may* make occasional mistakes. There may be some very good cows with very bad escutcheons, but I think the forty-years' experience of the best dairymen of the world, has established the fact, that there is much more in the Guenon theory, than in any other outward indication of quality. I believe that those who have made it a fixed rule of action, to own no cow, and to raise no heifer, which has not a *first-class* escutcheon, have to-day the best milking herds.

It may even be doubted, whether it is essential to good success, that we should give our attention to so much detail as is needed to determine even to which *class* a cow belongs, for the fundamental principle seems to be, that the quantity of milk, and the continuance of the flow, after the cow gets with calf, is chiefly indicated by the *area* of the escutcheon, whatever may be its shape; that is to say, that the amount of surface covered by hair growing in a direction that leads away from the teats, indicates the extent of that system of blood vessels or secreting organs, which act in the conversion of blood into milk. Practically, it seems not to make a very great difference, whether the surface so covered (the escutcheon) extends up to a good width and on both sides of the vulva, or whether it reaches out far on the thighs. Mr. Charles L. Sharpless, of Philadelphia, has advanced the suggestion, that the surface covered by a reversed growth of hair in front of the udder—out on the belly—is as important as that which shows from behind. With this idea in mind, we may safely be guided, in judging of the comparative value of two cows, by the relative amount of space so covered, whether such covering indicates any different conformation of the underlying vessels or not. When the purpose is not to compare two cows with each other, but to decide the individual merit of a single cow, then I should say that we should seek the fullest possible development of the escutcheon—one which runs up of good width, enclosing the vulva, which runs out well on to the thighs, and which reaches well forward on to the belly.

Guenon refers to certain "bastard" marks, which are of different character in the different "orders," and which, it seems to me, require more study than any one is likely to give, who is not endeavoring to make himself an expert in the matter. In my own case, and so far as I know in the case of friends who adhere to the system, not much attention is paid to these marks. It is quite likely that we should, all of us, find our account in studying this part of the system more minutely; but it seems the most desirable thing about the whole matter, that the people at large should attend to the leading idea, and regulate their breeding, and their buying and selling, according to its broader teachings. To this end, I should say simply: "Learn in the first place the difference in appearance between the escutcheon and the parts surrounding it; ascertain the standard of the largest escutcheon of the breed of cattle in which you are interested, and then try to secure a stable full of animals, approaching as nearly as possible to this standard."

It is one of the most important things in connection with this subject, that the escutcheon is well defined, even in the fuzzy coat of the new born calf, and that so far as this indication is relied on, we may at once determine whether the calf is to be kept or killed. In the calf, the upper part of the escutcheon shows for its full value, but it does not spread to its full width over the thighs until, as maturity approaches, the filling of the udder, and the development of that part of the body, spread it out. By turning the calf on its back, we may readily see the extension of the escutcheon toward the navel and the flanks. We may also judge of the size, position, and uniformity of the teats—a very important indication.

A letter from Belchertown, Mass., asks, "which is best for a creamery, to bring water (in which the mercury will stand at 50°) 800 feet through a loamy soil, or to adopt Hardin's plan? Would not covered pails be better than cans, on account of skimming?"

My advice would be to use the Hardin plan, or the Cooley, or some equivalent, only where a satisfactory supply of cold water can not be obtained. Even where water has to be pumped by a windmill or water-wheel, I should be disposed, if it could be delivered at a temperature of 50°, or even 55°, to prefer this system, if only for the sake of its simplicity. Where water can be brought by gravitation—in sufficient quantity—I should not hesitate a moment to make use of it.

The cost of laying a wood or cement, or vitrified pipe 800 feet, where the digging is easy, would be trifling, compared with the value of the permanent result. With a good stream of water, at 50°, we should be safe for winter and summer. Narrow cans are better than pails, because their smaller diameter brings their contents more readily under the influence of the temperature of the surrounding water. There is no difficulty, whatever, about skimming. A conical dipper, about one inch less in diameter at its top, than the diameter of the can, will usually take off the whole of the cream in two dippings, and with little labor and attention.

There seems to be quite a revival of interest in land drainage, especially in places remote from tile-factories, for I have a number of letters asking information about the making of tiles at home, especially about machines for molding them. Concerning the construction of the die-plate of the tile-molding machine, I hardly know how to make the subject more clear than I have done on page 180 of my book "Draining for Profit and Health," illustrated in figure 43. The die-plate, which forms the front of the box holding the clay, may be made of a piece of boiler iron, with one or more holes of the size of the outside of the tile. Projecting through this hole, and firmly attached to a crutch which straddles it, and is bolted to the plate, is a plug of the size of the bore of the tile. The annular space between the plug and the sides of the hole, represents the substance of the tile, the clay being forced through this space in a solid and continuous mass. For a small hand machine, it would probably be better to have only one hole—making but one line of tiles at a time.

It is always pleasant to receive a new book which has even a collateral bearing upon the industry in which one is interested. Being especially a butter dairyman, and having a large amount of skim-milk and butter-milk to dispose of, I was very glad to get Coburn's "Swine Husbandry," just issued by the Orange Judd Co. So far as I have been able to examine it, it strikes me as being, on the whole, the most comprehensive work having special reference to the needs of American farmers, that I have yet seen. It is especially to be commended to Western pork raisers for its valuable papers on the so-called "Hog Cholera."

We hear a great deal about the depredations of the grasshoppers at the West, but if our Western neighbors have this beam in their eye, we have at least a mote in our own, to which I fear we pay too little attention. Our Eastern grasshopper is getting to be something more than a serious nuisance. Last summer we put into the barn about 95 tons of hay. The haying season was followed by a severe and protracted drouth. Remembering the old adage, "drouth never made dearth in England," and having a good supply of green-fodder for soiling, we looked forward with lively hope to another good hay crop this year. Day by day the grasshoppers—whom we have always with us—increased. They seemed to find on our heavily manured land a better foraging ground than on some half abandoned farms in the neighborhood, and they congregated from all sides, until we were fairly over-stocked with them. In walking across the fields, we fairly threw up a spray of these insects. They ate the young grass as fast as it grew in such hot and dry weather—and they then set to work and ate crown and roots fairly down into the ground. As a result, we have this year mowed acre after acre bearing nothing but weeds, where we last year had good grass, and the extent of our loss will be understood when I say that we have this year housed only 25 tons of hay. Fortunately, our cured oats have yielded very well, and fodder-corn is unusually promising, so that we hope to carry our stock through the winter without difficulty, but the insignificant eastern grasshopper may fairly be charged with our loss of not less that 50 tons of hay, which could have been sold here for $1,000.

A Farm House Costing $5,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

The plans here given were originally designed for the residence of Mr. F. H. Johnston, Easton, Md. They will interest those desiring a good-sized, comfortable farm-house. ....**Exterior,** (Figure 1).—The site in this case being midway between the highway and a water front, (facing a tributary of the Chesapeake,) made it desirable to have two main entrances, adapted to either approach, and indicated the position of the kitchen wing at the *side*. The Conservatory is in an angle facing the Southeast. The Piazza and Roof Projections are of ample breadth to give abundant shade, and proper effect. As a whole, the outlines are rounded and compact, indicating completeness and strength—always desirable features in buildings of this class....**Cellar,** (Figure 2).—Hight of ceiling 8 feet. It has 13 windows, and outside and hatchway doors. Openings in the chimneys provide ventilation. The ceilings are plastered, to prevent the ascent of damp and unwholesome vapors through the frame-work of the house....**First Story,** (Figure 3).—Hight of ceilings in the main house, 11 ft. 4 in., and in the wing 9 ft. The main entrances lead from the piazzas, through large double doors, to the principal Hall, which is wide, and extends unobstructed, through the house. The main stairs occupy the space at the right, which is separated by an arch that preserves the continuity of the hall ceiling. The ordinary or family entrance, is by way of the Passage, and is convenient to all the parts of the house in daily use. A private stairway leads from the passage to the second story. The Parlor and Library are separated by sliding doors, and each has a bay and other windows. The Dining-room at the right, is pleasantly arranged; it may be entered from the main hall, or through the conservatory, or by the passage, or through the butler's pantry. Wide double sash-doors lead to the conservatory, and single sash-doors open to the piazza through the passage.—The Kitchen has doors leading to the passage, butler's pantry, cellar, and yard, and has three windows. It is provided with a range, pump, boiler, wash-tubs, and sink. The Butler's Pantry is spacious; one end is dresser finished, with counter-shelf and doors above and below. A counter-shelf is also placed at the opposite end, with wash-tray and closet. The sides are shelved around, and have cleats and hooks....**Second Story,** (Figure 4).—Hight of ceilings in the main house 10 feet; in the wing 9 feet. The divisions embrace six rooms, six closets, and the required halls. The platform of the main stairs is level with the second floor of the wing, and from it a door leads to the wing passage. The Bath-room has a bath-tub, wash-stand, and seat-closet, and a good-sized closet for toweling, etc. All closets have the usual shelving and hooks. Each chamber has marble shelves and stucco trusses....**Attic.**—The stairs leading to this story are above the main flight, inclosed with narrow ceiling, and have a door at the foot. There are two circular windows in each end gable, and one in each front. The whole is floored, but otherwise unfinished, to be used as an open garret....**Construction.**—The excavations are 4 feet deep, and the loose earth thrown out is neatly graded around, leaving three feet of the foundations exposed to sight. The Foundations are of hard burned brick, 12 inches thick for the main house, and 8 inches for the wing and conservatory. Brick piers, 12 inches square, are built for the piazza supports. The first story frame-work is beam-filled with bricks, where they rest on the foundation. This prevents draughts of air from entering the house between the foundation and the frame, and also keeps mice out of the frame at this point—*the latter is especially necessary along the lines of the main partitions.* The chimneys are of hard brick, arranged with continuous flues from each fire-place to the top. Tin 8-inch pipes, with the necessary elbows and register boxes, are inserted while building, to convey warm air from the cellar to the large chambers in the second story. The frame-work is constructed in the most thorough manner, of sound pine or spruce timber. The siding is of clear pine clapboard, laid on sheathing felt. Cornices of dressed pine. Principal roofing of cedar shingles. Piazza and bay window roofs of tin. Flooring of narrow yellow pine. The first and second stories are completed in every respect, ready for occupation. Each of the principal rooms and the main hall have stucco cornices and centers. Arches with neat ornamental corbels, are built across each bay window, over the L adjoining the main hall, and at the entrance of the passage leading to the bed-room in the second story. All sashes are 1½-inch thick, and glazed with four lights in each pair. Blinds (outside) are properly hung and fastened to each window above the cellar. The Conservatory is substantially constructed of light frame-work, with no superfluous dressing to obstruct the light, and glazed with plain, single-thick glass at the sides, and ribbed glass for the roof, has a narrow walk of slat-work leading from the dining-room door, and is arranged to be heated in winter from a furnace in the cellar. All parts usually painted, have two coats of best paint, of color and materials selected by the owner.

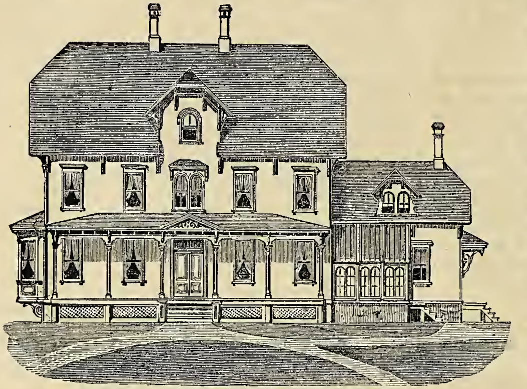


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

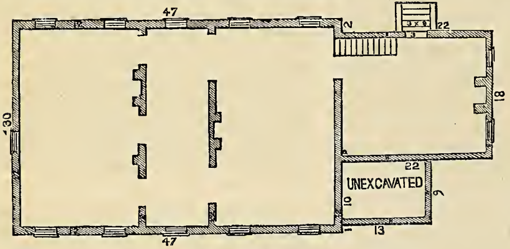


Fig. 2.—PLAN OF CELLAR.

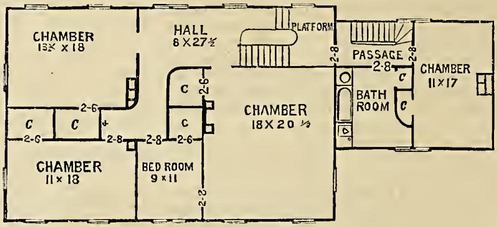


Fig. 4.—PLAN OF SECOND FLOOR.

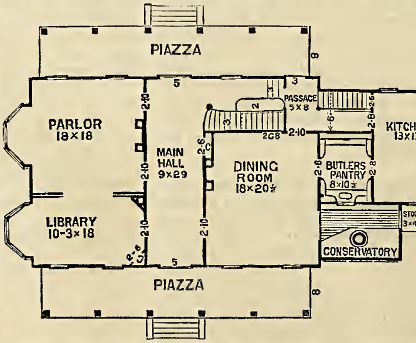


Fig. 3.—PLAN OF FIRST FLOOR.

Estimate: cost of materials and labor.

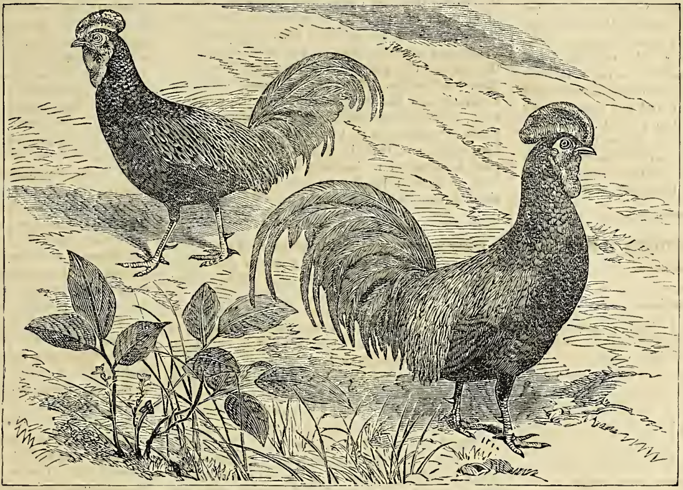
268 yards excavation at 20 cents per yard	$53.60
50.000 bricks, (furnished and laid,) at $12 per M.	600.00
88 ft. blue-stone, at 30c. per ft.	26.40
1300 yards plastering, at 28 cents per yard	364.00
175 do. do. cellar ceiling, at 16c. per yard	28.00
330 feet cornices, (complete) at 20c. per foot	66.00
4 centers, (complete), at $4 each	16.00
14,300 feet of timber, at $14 per M.	200.20

Sills, 4x10 in. 276 feet long.	50 beams, 3x10 in. 19 feet long.
Ties, 4x6 in. 490 feet long.	8 beams, 4x10 in. 19 feet long.
Plates 4x8 in. 138 feet long.	10 beams, 3x10 in. 18 feet long.
Perlines, 4x9 in. 214 feet long.	1 beam, 4x10 in. 18 feet long.
Ridges, 3x9 in. 67 feet long.	11 beams, 3x9 in. 18 feet long.
Ridges, 3x7 in. 20 feet long.	28 beams, 3x9 in. 19 feet long.
Gables, 4x6 in. 200 feet long.	28 beams, 3x10 in. 10 feet long.
4 posts, 4x8 in. 26 feet long.	14 beams, 3x9 in. 10 feet long.
8 posts, 4x8 in. 23 feet long.	78 rafters, 3x6 in. 25 feet long.
4 posts, 4x7 in. 13½ feet long.	34 rafters, 3x5 in. 15 feet long.
2 posts, 4x7 in. 12 feet long.	Braces, 3x5 in. 240 feet long.

175 joists, at 13c., $22.75; 400 wall strips, at 10c. $40	62.75
800 lbs. felt, at 4c., $32; 800 siding, (clapboards) 10c..$80	112.00
Cornice materials	120.00
500 rough roofing, at 14c. each	70.00
12,000 shingles, at $10 per M.	120.00
11 squares tin at $9 per square	99.00
450 feet valleys, gutters, and leaders, at 10c.	45.00
5,366 ft. flooring, at 3c. per foot	160.98
13 cellar windows, complete, at $6 each	78.00
30 plain windows, complete, at $12 each	360.00
2 bay windows, complete, at $60 each	120.00
2 dormer windows, complete, at $20 each	40.00
4 stairs, complete	150.00
38 doors, complete, at $12	456.00
Piazzas and stoops, (exclusive of floors & roofing)	250.00
Conservatory, (complete)	150.00
Mantles, (complete)	102.00
Pantry and closets, (complete)	75.00
Nails, $24; Carting, average 1 mile, $50	74.00
Range and plumbing, (complete)	250.00
Carpenter's labor, not included above	450.00
Painting	272.00
Incidentals	29.07
Total Cost, complete	$5,000.00

The East Indian Jungle Fowl and Hybrid.

The East Indian Jungle Fowl is closely related to our domestic fowl, and of some particular breeds it is a direct progenitor. If any doubt of this has ever existed, it is dispelled by the fact that this wild species will breed with the common domestic hen, and produce fertile hybrids. In the accompanying engraving we give portraits of a pure Jungle cock—the smaller bird—and a hybrid cock produced by the union of the former with a common hen. The birds, of which these engravings are portraits, are now, or were lately, in the Zoological Gardens in Regent's Park, London. The Jungle fowl is of the species known as the "forked tail fowl of Java"; the *Gallus furcatus* of the naturalist, Temminck, and *Gallus varius*, of Shaw, the latter name being considered by good authorities as the more correct one. This species differs from all others of the genus *Gallus*, in having but a single wattle, placed between the mandibles, instead of one being placed upon each side, as is usual with other fowls, and also in having the tips of the neck hackles square instead of lance-shaped. The color of the plumage is also unique, exhibiting very bright metallic hues in the sunlight. The head, neck, and upper part of the back, are of bright metallic green, each feather being margined with black; the rump and upper tail coverts are black in the center, with the margins of both webs yellow; the tail sickle-feathers are much curved, as narrow as in a good game cock, and in color are a metallic green, with black along the shaft. The central tail feathers are black on the inner webs, and bright green on the outer. The smaller wing coverts are red with black centers, in some specimens the edges are yellow. The ten primary quills are dark-brown, the secondaries are black, lightly edged with red, which is shown when the wings are closed. The whole of the under parts are black; the comb and wattle are very singularly colored, being green next to the head and throat, and red and yellow below; the comb is smooth, and without serratures; the bill is horn-color, and the legs flesh-color. As may be seen by the portraits, the hybrid partakes very much of the character of the male parent, but it is larger, having a fuller tail, longer saddle feathers, and lance-tipped hackle. The hybrid is less wild in appearance than the parent, and has more of the sedate composure of our domesticated species.



THE JUNGLE FOWL AND HYBRID WITH DOMESTIC FOWL.

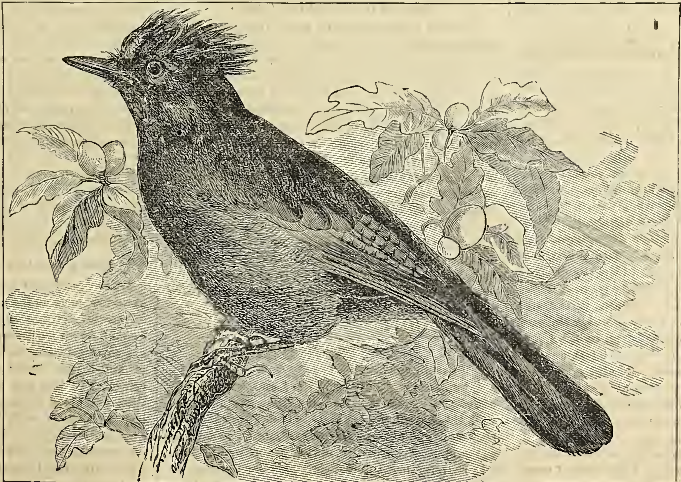
Several young birds were hatched from eggs fertilized by the hybrid here figured, and another one, last year; and the noted English poultry fancier, Mr. W. B. Tegetmeier, hopes that a beautiful addition to our poultry yards may in time be produced from the hybrid race. The original portraits from which these were photographed, were published in the "London Field" about a year ago. The birds themselves are in the Regent's Park Zoological Gardens, and there are none for sale anywhere, either in Europe or in this country.

* * *

The Oregon Blue Jay—Steller's Jay.

BY DR. F. S. MATTESON, COQUILLE CITY, OREGON.

The Jay of this coast, and the only representative of the sub-order in this valley, is *Cyanura Stelleri*, or Steller's Jay. It inhabits the western watershed, from the summit of the Rocky Mountains to the Pacific, and from Russian America to Lower California. The plumage of the bird is thus described by Coues: "Sooty-brown, darker on the head, passing insensibly into rich blue on the rump, and below from the breast. Wings and tail deep Prussian blue, with black bars (wanting in very young birds); crest faced with some blue touches, and throat with some whitish streaks; no white on the eye-lids; tail moderately rounded; crest about two inches long when full grown."



THE OREGON OR STELLER'S JAY.—(*Cyanura Stelleri.*)

The blue color of this bird is only on the parts of the feathers which are exposed to the light. Inside of these they are of variable shades of sooty-brown. The secondaries and tertiaries are barred with black, as are also, but indistinctly, the upper surface of the tail and the greater wing coverts. The under surface of the tail is sooty-brown, while the corresponding surface of the wing is ashy-brown. The bill is 1⅛ inch long, black, corneous, strong, tapering, acute, with both mandibles of equal length and meeting at a point. The nostrils are closely covered with bristly tufts. The eye is black, and its expression "wicked." The crest is 1¾ inch long, pointed, and directed backward, but can be erected or depressed at pleasure.

The specimen from which the accompanying engraving was made, is 12 inches long, expanded wings 16 inches, tail 5 inches. The legs are covered to the heel with short, sooty-brown feathers, with a tinge of blue on the outer and front sides. The feet and tarsus are black, the latter scaly in front, and separated on each side from the rest of the tarsal envelope by a well defined groove. The female mainly differs from the male by being a shade lighter in color.

This bird frequents both forest and field. It is a noisy, thieving pest; a marauding vagabond of the first water. It is a voracious glutton, and eats anything that he can overhaul. It opens a nut by holding it in its claw, placing it on the limb it is perched on, and raising to its full hight, brings down the sharp point of its beak in a steady succession of vigorous blows, until the shell is broken. It pulls up the farmer's young wheat, corn, peas, etc., in early spring; steals the eggs of the hens in summer, and forages on the grain accessible to him at all times. It robs the nests and eats the young of birds weaker than itself, and makes itself obnoxious generally. Merciless and cowardly among its feathered neighbors, feared by the weak, and hated by the strong, it is constantly employed either in forays upon the defenseless, or using its wings vigorously to escape from some well deserved punishment. When frightened from its thieving raids, it flies rapidly to the cover of the nearest thicket, calling out loudly and defiantly, "kwak, kwak, kwak, kwak," but as soon as concealed from view, it remains silent. It does not sing (it has not this redeeming quality), but its notes are many and varied. It cries, "Jay, Jay, Jay," with great distinctness. It also says, "steal it, steal it," and will surely do it, if opportunity offers. In summer the Jay retires to the recesses of the forests to breed, where it builds a nest of sticks, moss, etc., in the midst of a thick-topped bush. The eggs are of a blue color, and from four to six in number. Returning, after the incubating season, they bring their family with them, to pursue their free-booting practices with undiminished energy. The progeny take aptly to the disreputable ways of the parents, and soon become experts at thieving and plundering. As may be inferred from its character, this Jay is not a favorite with the settlers, and is remorselessly pursued with guns, traps, poisoned grain, and any other agency which promises its destruction; but for every Jay killed, twenty others appear. Though war goes on, the ever present Jay appears still as numerous, and his capacity for feeding on the farmer's crops, and the eggs of singing birds, as great as ever.

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Among the Farmers.—No. 20.

BY ONE OF THEM.

Making Manure.

Such a season as we have been experiencing—showers every day or two, and often heavy rains, so that our light, gravelly soils are constantly moist. Such a season produces rank and abundant vegetable growths, which may contribute much to the bulk of the manure heap. Weeds grow in the garden, along the hedge-rows, in the foundation of the old barn, long since pulled away and cleared up, and the problem is how to secure the most

Rapid Fermentation and Decay.

There is always the danger, that in the decay which naturally comes on when succulent vegetation lies in masses through which the air can circulate, the mass will pack so tightly, that the larger and more woody stems will become enveloped in the wet mass, and so, the air being shut out, will decay no more, but remain like so many ropes, forming a mass which it is almost impossible to handle with forks or shovels. The remedy for this is simple. The contents of these weed compost heaps must be cut in foot lengths, just as we handle corn-stalks in winter. The weed-stems may be cut with a sharp spade on the ground. This works well, and is often the best way, because there is the least work in it. Another good way is, when there is a patch of tall weeds to be cut, to cut over the ground two or three times. The first time the mower clips off all the soft tops, a foot or twenty inches long, perhaps, then the stems are cut about eight or ten inches lower down, and finally close to the ground. This leaves the material in the best possible shape for the compost heap; it may be raked up and loaded upon the cart without difficulty, it may be laid up nicely in the heaps, and, when decayed, may be easily overhauled.

The secret of rapid decay is no secret, so to speak. It is one of those "secrets," or "hidden mysteries" of nature, which, when we really come to investigate, we find we knew all about before. Dry things do not decay, neither do water-soaked things. When we pulled the old barn down, two or three years ago, I found some of the thatch, that had been turning the water for thirty years or more, sweet and dry, and used it for bedding in the stables; and on the other hand, Cæsar's bridge timbers in the Thames, and the piles driven by the Lake-dwellers in Switzerland, the former 2,000, and the latter perhaps 10,000 years old, and still sound, indicate that water is a first rate antiseptic. Now air and water together being essential to rapid decay, our art is to lay up our compost heaps so that we can make them wet, and partially dry them alternately, bringing all parts under the combined influence of air and moisture. A few layers of horse manure, thrown in as the heap is built, having the depth of about two inches each, greatly expedite the decay. As soon as the first good heat is over, there will be a lack of water. The succulence of the plants themselves, afford moisture enough for this first and most active heating, and rains may supply water to keep the decay in active progress, for some time, but the heap will gradually dry out, and ought to be "cut" over and relaid with fresh material, and given a good soaking at least twice during the season.

Swine as Manure Makers.

When a sufficiently large herd of swine is kept, they make the best composters and workers-over of material of the kind of which we have been speaking, and a few are well kept at work. The weeds and vegetable matter, cut short, should be thrown into the pig pen, but they should soon be thrown out again. If the pen be cleaned out once a month, and the manure added to the compost heap, it will decay much better, for there will be better circulation of air through it; but it must be kept moist, and there is no plan for making a compost heap, equal to building one over or near a tank or sunken hogshead, out of which water may be pumped to moisten the heap with.

Hay Cured, not Dried.

Every year the problem comes up, how green will it do to get in hay? and every year our practice is to get it in with less and less drying. Cut between 4 and 8 P. M.; the next day, if heavy, shaken up and turned before noon, and once after, then raked up at 3 P. M., and got in the same afternoon, is pretty quick work, and to accomplish it, and have the hay cured enough to keep without salting, requires a hot, drying day. I have just had excellent luck, cutting late one day, raking into windrows at about noon, cocking up by three o'clock, and getting in the next forenoon, and using salt or not, according to the condition of the hay. This hay is cured and little dried, and there is very little work about the operation. Salt has a wonderful effect. I do not understand it. The hay "sweats" well, but if salted rarely molds, or gives off any but fragrant odors. It does not seem to me that the salt could come in contact with the hay so generally as to affect it all, and yet every lock seems to be preserved.

I have never used salt upon corn-fodder, but I shall do so this year, confident that four or five quarts to the ton will aid greatly in curing it, and prevent the necessity of so much drying. The finer the salt, the further it will go in salting hay. A handful of salt will penetrate through three feet of hay in the mow, as I have proved by experiment, and I presume if the hay were very dry, it would rattle down a good ways farther.

Harrowing Growing Crops.

I am old fogy enough to stand out pretty well against startling innovations. Though, I confess, like Daniel Boon's coon, I came down from previously held notions when John J. Thomas advocated harrowing field corn, and invented a harrow to do it with; but this harrowing of spring grain, particularly oats, has something in it so positively repugnant to general views of thrift, that I had no thought of giving it a trial, any more than of planting an acre or two of Prickly Comfrey, or adopting either flat culture or the "Ross system" for corn. We do not all think alike. Discussing crop prospects the other day with Mr. Devereux Pennington, of Bergen Co., he spoke of his oats, (everybody's oats are looking well), and said that after having been harrowed *seven* times, they were standing very evenly, waist high, all over the field, and that there were almost no weeds to be seen.

"What," said I,

"Seven Times Harrowed,

"What do you mean?"

"I mean just that," said he, "and besides," he added, "I have learned another thing in connection with this harrowing business, which I am surprised that you did not see the advantage in, as soon as the subject of harrowing spring grains was broached; that is, that top-dressing may be done at almost any time, well along into the spring."—Then he gave me the history of the particular field of which we were speaking, and afterwards a transcript of the memorandums in his Farm note book. It seems the ground, which is light, sandy alluvial, was plowed last autumn, and this spring top-dressed with manure compost over about one-third of the field. When he was ready to sow, he did not wait to finish the manuring, but having determined upon harrowing the crop several times, sowed the oats and harrowed them in, and then kept right on with the top-dressing.

The following are the memorandums:

"April 12th. Sowed $3\frac{2}{5}$ acres with White Probstier oats, on ground plowed last fall, and part of it top-dressed this spring. Used 9 bushels of 32 pounds, broadcast. (The balance of the ground was afterwards top-dressed).—April 13th. Rolled oat ground.—May 2nd. Harrowed oats 1st time; May 7th, 2nd time; May 21st, 3d time; May 25th, 4th time; May 28th, 5th time; June 4th, 6th time; June 12th, 7th time.—The oats are now looking very well, and promise a large yield of clean seed."

The oats top-dressed after sowing, had—so it appears to Mr. Pennington—greater benefit from the manure than the others, where both manure and oats were harrowed in together, for it served as a mulch to them when just coming out of the ground, and being disturbed by the subsequent harrowings, and knocked about more or less, the weeds starting up under its influence were more thoroughly killed. This seems reasonable. The harrow used was a heavy, long-toothed common harrow, but it was not dragged promiscuously over the field, but every time as nearly in the same tracks as possible. After once or twice this became an easy matter, and the teeth followed in the old tracks, as we go and think in old ruts, from habit. Some oats were torn out at first, of course; some were buried past resurrection, no doubt; the harrow teeth cut furrows through them, and ranged the plants in phalanxes as if put in by a drill, and then in passing through subsequently, few were disturbed. The ground was disturbed, and weeds were killed by wholesale.

At the time of the last harrowing, the oats were 14 inches high, and were, as might be expected, pretty well flattened down by the operation. Still, as the "pusley" (I quote the word as being vernacular—purslane is too respectable a name for the "pesky" plant,) was just starting—showing its minute red leaves above the surface, this last harrowing wrought wholesale destruction by covering it with earth.

The action of a harrow-tooth in passing through light soil, is to throw a perfect shower of earth to either side, so that harrowing not only loosens the soil about the plants—a very beneficial operation, admits air, and with it warmth and moisture, but effects a very thorough destruction of weeds by burying them in their most delicate and vulnerable condition, that of the seed-leaf.

Not the least advantage of this system is being able to plow in the autumn. I have sometimes done this—that is, put spring grain on land plowed in the fall without plowing again, but have always felt—and so have the oats—that the ground was not really half prepared, and it is much more apt to be weedy than spring-plowed land. On our light sandy loams, we have to take care that the ground is not too much exposed to washing by heavy rains in winter, so there is much land on hill-sides which can not be plowed in the autumn under any circumstances. The harrowing, however, may be done as well on spring-plowed as on fall-plowed land.

Early Sowing of Grass and Grain.

Winter grain and grass seed may, and should be sowed as early as the ground is clear after the first of August. Grass seed earlier. When land is to be laid down to grass, I find that early seeding—say sowing in July rather than in September, if the ground is rich, makes all the difference between a fair crop of hay and next to none the first year. One rich piece of moist land, well manured, was last year sowed with Timothy and Swedes, about the middle of July. A big crop of roots was taken off, and this year, Timothy hay, at the rate of two tons to the acre, I should judge. The Clover sowed in the spring making no great figure.

Last year a piece of land of one of my near neighbors was manured in July for turnips, with manure from the barn-yard, which had accumulated since the yard was cleared out in the spring, and during the extreme drouth from which we suffered. A good part of the manure was rye chaff, mixed with animal droppings. Grass seed was sowed at the same time, but like all the rest of the grass in this section, it was burned out and made no sign. Something started, it was taken for "barn-grass," or some coarse grass of the kind. The turnips yielded well, and the grass, to the surprise of every body, did not winter-kill, and was so green in the spring, that it was suffered to stand to see what it would come to. It proved to be rye. The chaff contained light seed which did not decay because the season was so hot and dry, so it was sown with the manure early in July. It was the earliest, tallest, and finest rye cut in our whole neighborhood. I conclude not that shriveled seed is the best—though possibly some people might argue that, for perversity, but that we can hardly sow too early.

Talks on Farm Crops.—No. 7.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"Two years ago," said the Doctor, "you sowed wheat and rye together. What was the result?"

"The result," said the Deacon, "was a noble crop of rye, with a few heads of wheat scattered through it. I see nothing to be gained by it."

"I intend to give it another trial this fall," said I, "the wheat did not hurt the rye. I had apparently just as good a crop of rye as if no wheat had been sown. I sowed half a bushel of wheat, and one and a half bushels of rye to the acre. This year I propose to sow five pecks of each per acre."

You ask what I expect to gain by it? Let me say (1) that the land on which I propose to sow the wheat and rye, did not produce a good crop of wheat the last time it was sown. It winter-killed. And this was not the worst of it. The clover-seed failed. And you know what this means. It is bad enough to lose a crop of wheat and a crop of clover, but worse still to have thistles and other weeds get full possession of the land. The field, or rather part of the field, has not got over it yet, and will not until I get it down in clover and grass. (2) The land has been underdrained since it was last in wheat, and consequently we stand a far better chance to get a good crop of wheat; but (3) I do not feel at all sure of a good crop of wheat. But (4) I feel tolerably certain that rye will do well on this land. And (5) there is a good chance for wheat to do well. It will depend on the season. And so (6) by sowing wheat and rye together, I am pretty certain to get a fair crop of rye, even if the winter and spring are unfavorable for wheat. While on the other hand, if the season should be favorable, I should be likely to get a good half-crop of wheat and a good half-crop of rye. And (7) a good half-crop of wheat, and a good half-crop of rye, is better than a good crop of rye alone.

"That is all very well," said the Deacon, "but you did not get five bushels of wheat to the acre."

"True," said I, "but we had a good crop of rye. The truth is, the season was a very unfavorable one for wheat, and, as I said before, we did not sow wheat enough. The rye got full possession of the soil, and crowded out the wheat. This year I mean to sow less rye and more wheat."

Sowing wheat and rye together, is not a new idea. It has long been practised in Germany, where the crop is called Mezlins, and in some parts of England, wheat and rye were formerly extensively grown together. The crop was called "Monk-corn." I suppose because the brown-bread made from the mixture, was formerly used by the Monks, as it is to this day used in many English farm houses.

"Yes," said the Doctor, "and sweeter and nicer, and more wholesome and nutritious bread, when properly made, was never eaten."

"I can endorse all that," said I, "but of course I have no thought of raising this crop with any expectation of a demand for the mixture. But we have now machines that will take out *nearly all* the wheat from the rye. If I could grow a large crop of wheat and rye together, I should have no difficulty in getting at least ninety per cent of the wheat separated from the rye, and the remaining ten per cent being mixed with the rye, would at any rate be no injury to the market value of the rye for milling purposes. It would be more likely to add a few cents a bushel to the price of the rye."

There would be a *little* rye in the wheat, but not more than is found in average samples of wheat.

"But the wheat and rye," said the Deacon, "do not ripen at the same time."

"True," said I, "and that fact probably accounts for the opinion that the only way to get good monk-corn or mezlin flour, is to grow the wheat and rye together. It is claimed that you can not get good brown bread merely by mixing wheat and rye flour. The wheat and rye must not only be ground together, but grown together. When grown together, the crop would not be cut until the rye was fully ripe, while the wheat would be only just out of the milk conditions favorable for high quality in both."

Rye can be sown earlier or later than wheat. In this section it may be sown from the middle of August to the middle of October.

Light sandy, shallow, gravelly soils, that will not produce wheat, may yield a good crop of rye. Low, black, sandy alluvial soils, where wheat would be likely to winter-kill, or where, if it escaped the winter, would be likely to rust, or lodge, or be so late as to become an easy prey to the midge—on such land rye frequently produces a good crop. It is on just this character of land where I have seen the heaviest crops of monk-corn. If a farmer thinks his soil likely to produce good winter wheat, he will not sow rye. It is only in doubtful cases where rye or rye and wheat will be sown.

The preparation for rye is usually the same as for wheat. A clover-sod or a summer-fallow, is far more likely to give a good crop than when rye is sown after barley or oats.—"I have seen a good crop of rye," said the Deacon, "raised after potatoes."—"Yes," said I, "especially if the potatoes had been well manured, or the rye was dressed with two hundred lbs. of Peruvian guano, or superphosphate, per acre."

Mr. Orville Bailey, of Livingston Co., N. Y., once told me that he raised 64½ bushels of rye per acre. It was grown on land that had been in meadow for 20 years. It was broken up and planted to corn. The next year it was *prepared for tobacco*, but *not planted*. It was sown with rye early in August, and was eaten off by sheep during the winter. This is the largest crop of which I have any personal knowledge—25 bushels per acre is a fair yield. Mr. Bailey's land, though not manured for years, was unquestionably in good condition. It was, practically, summer-fallowed, was sown early, and, as the original intention was to use it merely for green fodder, I presume it was seeded heavily.

As to the amount of seed per acre, the Deacon, the Doctor, and other practical and theoretical authorities differ. The Deacon thinks five pecks abundant, while the Doctor, from observation rather than experience, says he would never sow less than 2 bushels, and if not sown until late, say the last of September, he would put on 2½ bushels, or if not until October, he would sow 3 bushels. When straw or green feed is the principal object, he would sow early and sow thick—say the 1st of September, and 2½ to 3 bushels per acre. Rye does not germinate so soon as wheat, and when sowing them together, this fact is a decided advantage. The wheat, if the soil is mellow and moist, has a chance to get hold of the ground before its coarser and hardier associate is strong enough to smother it.

"That is so," said the Doctor, "and I would advise you, instead of sowing, as you propose, 1½ bushels of wheat and 1½ bushels of rye, to sow 2 bushels of wheat and 1 bushel of rye. If your rye is too thick, the wheat stands a poor chance."

Rye is a capital crop to seed down with. The only decent catch of clover I have had of late years, has been with rye. I sowed last year on wheat, rye, and barley, and the clover on the rye was decidedly the best, wheat next, and barley last. I sowed Timothy with the wheat in the fall, and red and white clover in the spring. The Timothy did quite as well on the wheat as on the rye, but the clovers, sown at the same time in the spring, were decidedly better on the rye than on the wheat.

"It need hardly be said," remarked the Doctor, "that rye affords the best of all straw for bedding horses. It often brings a very high price. A farmer could well afford to sell rye straw and buy clover hay or bran with the money. The exchange would give him more food and richer manure. English farmers would raise more rye, did not a clause in their leases prevent them from selling straw."

"Rye straw," said I, "will keep horses cleaner than any other bedding, and will last longer than wheat, or oat, or barley straw, but I am not sure that, *for a farmer*, it is any better than wheat or other straw. It will *not absorb any more liquid* than wheat straw. The horse men like it because it is tough and keeps the horse dry and clean. It lets the liquid pass through. But this is not what a farmer wants, especially in bedding pigs and sheep, as we seldom have any arrangement for carrying off the liquid. We use straw as an absorbent, and wheat, oat, and barley straw, especially when cut into chaff, will absorb more liquid than long rye straw. From all which I argue that where there is a good demand for rye straw, it is well to sell it."

"Rye is often grown merely for the straw," said the Doctor, "and is said to be a profitable crop."

"It does not exhaust the soil so much," said the Deacon, "as when it matures. It is the seed that contains the nitrogon and phosphoric acid."

"True," said I, "but it is hardly safe to take it for granted that a crop of corn, when grown for fodder, or a crop of rye, when grown for straw, does not remove just as much nitrogen and phosphoric acid from the soil as when raised for grain. The grain exhausts the straw. I think that it will be found as necessary to have land rich to produce a large crop of corn fodder, or a large crop of rye straw, as to raise a crop of corn or a crop of rye."

In raising rye for soiling, or for eating off on the land by sheep in the spring, it is well to select the earliest, warmest, and driest land attainable, and get it into prime condition by plowing, harrowing, and rolling. The richer it is the better. Then sow early and quite thick, say 3 bushels per acre. It has never been a favorite crop with me in this section. Our springs are too short. It is the earliest crop we have, but it does not last long enough. It is no sooner ready than it is past its prime. If the sheep have plenty of mangels, they can wait until the clover is ready for them. If no roots are raised, or the crop is short, it would be well to put in an acre of rye for each fifty head of sheep.

If we could do as Mr. Bailey did, sow the rye on rich well prepared land, and pasture the crop at times, during the winter, and raise, as he did, 64½ bushels per acre, it would be one of the most profitable crops a farmer could raise. The straw is generally twice the weight of the grain, and is usually worth at least $15 per ton. Such a crop would net, above all expenses, at least $100 per acre.

An American Silo.

The description of a French method of preserving corn fodder, given in the *American Agriculturist* for June, 1875, has brought out numerous inquiries as to the possibility of using the same system here. Curiously enough, it is thought by many that the method is neither practicable, nor profitable for us, although the very same manner of preserving an article of feed, not unlike corn fodder in many respects, has been in successful use for several years by more than one farmer of our acquaintance. The feed referred to is brewers' grains, a substance quite as moist, succulent, and easily fermentible as corn fodder. If this can be perfectly preserved for many months, why could not corn fodder be as well preserved in the same manner? In the *American Agriculturist* of April, 1875, we described a model dairy barn, belonging to Mr. Brady, of Katonah, N. Y., to which is attached a silo, built upon the same principle as those in which the French farmers preserve their corn fodder. The only difference being, that the French silos are long and narrow, while Mr. Brady's is more nearly square. The long and narrow silo is undoubtedly the better of the two, but the difference in shape does not influence the effectiveness of the silo, except in degree. We give an engraving (fig. 1), showing the shape and manner of construction of the Katonah silo, and at figure 2 the manner in which it is used. It will be seen that the only difference between the operation of this and the French silo, is, that the former has not so dense and compact a covering as the latter. A very close covering is not so essential with brewers' grains, as with corn fodder, because they pack much closer and exclude the air better than the looser corn stalks; but when the latter are cut up into chaff, and thoroughly well pressed down, a mere covering of planks, nicely jointed upon the edges, would be sufficient for the exclusion of the air from the mass below. It is always preferable to cut the fodder into pieces, not longer than one inch, for the reason that it then packs more closely and the preservation is more complete. The silo, shown in figure 1, consists of a sort of basement cellar, with the door opening into the cow-stable (Mr. Brady's farm is a milk dairy), and the rear sunk for the most part beneath the ground; a road passes the end of it, where there is a door, shown by dotted lines, for the purpose of unloading the grains. The walls are of stone, and the floor is of cement. The silo is covered with an ordinary shingle roof. The grains are packed in solidly, until they reach the level of the door at the top, when they are covered with boards, and some straw is thrown over the boards. When the grains are required, the lower door is opened, and the grains, as fresh as when put in, but somewhat sour, are dug out for use. As the mass is cut away, nothing is done to the surface which is left exposed to the air; but as the grains are very quickly used in this large dairy, there is not time for them to be injured, and the surface is made fresh every day by the removal of what was left exposed the day before. The same method may be applied to the preservation of corn fodder. As cut green fodder lies in a looser and more open mass than grains, it would be necessary to have a cover as nearly impervious to air as possible, for use when the silo is opened and the preserved fodder is in course of consumption. This may be easily done by means of wide planks, jointed smoothly at the edges, which should be laid upon the face of the mass of fodder as it is cut away. Pins may be inserted in a few of these planks, upon which another plank may rest, and the whole cover may then be pressed tightly against the fodder by means of a piece of timber placed with one end against the wall, and the other end resting upon the cross-plank, and thus made to act as a wedge. (This is shown in figure 2.) It will be necessary to cut away the mass of fodder smoothly and regularly, leaving an even surface for the planks to rest against. In packing away corn fodder in this manner, it would be very useful to mix a considerable proportion of cut straw with it, to absorb the superabundant moisture and to moderate the fermentation. It has been found in practice, that this plan serves to increase the feeding value of the straw, without deteriorating in the least the quality of the corn. It has also been proved, that the fermentation which the corn undergoes, changes some of its cellulose in character, and renders it more digestible, as well as transforms some of its starch into sugar, and some of its sugar into alcohol. The preserved fodder possesses an agreeable vinous scent, which is not at all distasteful, but rather otherwise, to the cows to which it is fed. When it is understood how easily this valuable fodder may be preserved, we shall look for the adoption of the method upon dairy and stock farms, where the food supply is a matter of serious consideration.

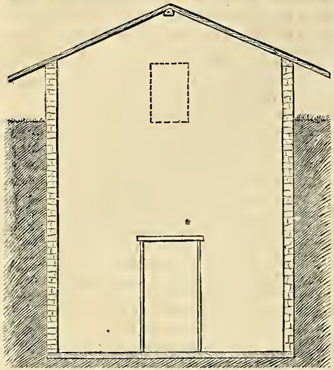


Fig. 1.—VIEW OF SILO.

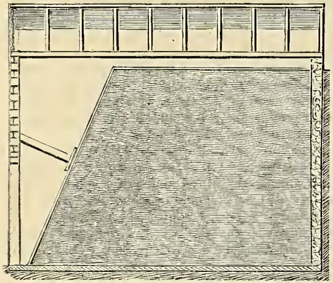


Fig. 2.—MANNER OF COVERING.

A Non-Freezing Pump.

In the *American Agriculturist* for March, 1877, we gave illustrations of some very excellent pumps which were so well adapted to a variety of uses that they were appropriately called "Universal" pumps. At this season, when we are necessarily on the lookout for proper appliances for use in the rapidly coming winter, a non-freezing out-door pump for the houseyard, the barnyard, or the field, will be a timely thing to consider. The pump here illustrated is one of this character, intended for wells from 20 to 200 feet deep, and is made by the manufacturers of the "Universal" pumps above alluded to, viz., the Nason Manufacturing Co., of Fulton st., New York. This pump is built in a remarkably strong manner, being protected by flanges or buttresses on four sides. This mode of construction gives comparative lightness with great strength. The barrel of the pump, as may be seen at figure 1, is very narrow, so that it is quickly filled, and as quickly emptied, which in cold weather tends to prevent the water inside from freezing, and also saves time in bringing the water. A tap, below the surface of the ground, permits the water to escape rapidly, as soon as the working of the pump is stopped; in winter this tap is kept open, but in summer it is closed. Ventilating holes are made in the well-cover, and the standard, as shown by the arrows, and these provide for a circulation of air in the well; as water may be drawn out of it, air enters, and thus the well is supplied with fresh air. These holes being placed high in the base, no vermin of any kind can enter the well. The handle is fluted, so that it can be attached in a moment to the rod of a windmill, by means of a clip and a set-screw, and as quickly released. Figure 2, shows the arrangement of air chambers and valves for a deep well, which are used with this pump. As the pump is wholly of iron, with the exception of brass cylinders, which are provided when desired, and very strongly made, although from its construction it is much lighter than would be supposed from its exterior appearance, it is excellently adapted for farm use for both the deep and shallow wells.

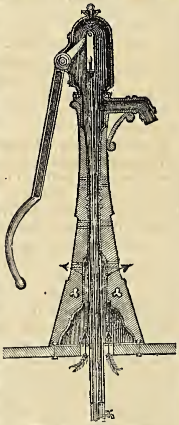


Fig. 1.—THE PUMP.

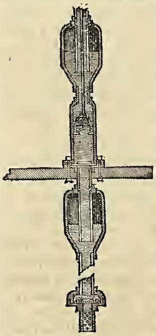


Fig. 2.—VALVES, ETC.

Ventilators for Fodder Stacks.

The perfect curing of fodder corn is difficult, even with the best appliances; as usually done, the curing is very imperfect. The fodder corn crop is one that merits not only the best preparation of the ground and the best culture, but it is worthy of special care in harvesting and curing. The French farmers are giving much attention to this crop, and by good culture, are raising most extraordinary and very profitable yields. Seventy tons per acre is not unfrequently grown by the best farmers. We do not average more than eight tons per acre, yet with us the corn crop may be grown under the most favorable circumstances. In a few instances, a yield of 30 tons per acre has been reached by one farmer, but this is the highest within our knowledge. One of the most prominent defects in ordinary American agriculture is, the neglect with which this easily grown and very valuable crop is treated; and one of the most promising improvements in our advancing system of culture is, the attention now being given to fodder corn. A drawback under which we labor is the difficulty of curing such heavy and succulent herbage; this, however, will by and by be removed, both by the adoption of the French system of ensilage, and by better methods of drying the fodder. On the whole, the system of ensilage offers by far the greatest advantages; the fodder being preserved in a fresh and succulent condition, and the labor of preparing the silos, cutting the stalks, and properly protecting them from the atmosphere, being actually no more than that of drying the crop in the usual manner, storing it in stacks, and cutting it afterwards for use when it is needed. It is impossible, however, that even the best improvements can be introduced otherwise than slowly and with caution; the old system, although it may be less effective and profitable than the new, will be long retained by many; and even in the old methods improvements are being made from season to season by the ingenuity of farmers. For instance, we recently saw a very simple but useful arrangement for the ventilation of stacks, and mows in barns, which is applicable to the curing of corn fodder. It consists of a frame (fig. 1),

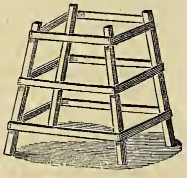


Fig. 1.—FRAME.

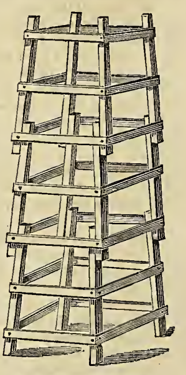
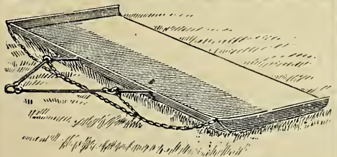


Fig. 2.—VENTILATOR.

made of strips of wood, put together with small carriage bolts. The strips may be made of chestnut, pine, or hemlock, the first being the most durable and best, 2 inches wide and 1 inch thick. The illustration shows how these strips are put together. The length of the section shown may be three or four feet. At figure 2 is seen the manner in which the sections are put together. A small stack may have a column of these ventilators in the center; a large one may have three or four of them; in a mow in the barn, there may be as many as are needful, two or three, or more, as the case may be. When made in this shape, they are so portable, and easy to use, that the greatest objections against ventilators are removed. In stacking fodder corn, it is safest to make the stacks small. Three of these sections, placed together in one column, are sufficient for a stack containing three tons, and which would be about 14 feet high. The sheaves should be small, and the stack somewhat open at the bottom, so as to freely admit currents of air. The top of the stack should be well protected, to keep out the rain; a hay cap fastened over the top, would be very effective for this. If a quantity of dry straw could be thrown in between the bundles, and on the top of each layer of them, the perfect curing of the fodder would be then secured.

A Western Locust Trap.

A great many devices have been used for the destruction of the locusts in those Western States where they have done so much mischief for a few years past. Whether the locusts are to remain as a permanent pest to the Western farmers, or not, remains to be proved. It is certain, however, that through some effects of the climate, the attacks of parasitic enemies, their consumption by birds and other animals, and by the efforts of the farmers themselves, the locusts have of late been greatly reduced in numbers, and their depredations have become almost inconsiderable. Many methods have been adopted for their destruction. Rolling the ground; plowing furrows, and making pits in them in which the insects are caught; burning them in long piles of dry grass; catching them in large sacks, and upon frames smeared with gas tar, and upon large sheet-iron pans containing burning fuel; all these have been tried with more or less success, as well as the negative means of diverting them from their course by means of thick smoke from smothered fires of prairie hay. But the most effective method is one that has been invented by a woman in Minnesota. This consists of a large strip of sheet-iron, from 10 to 30 feet long, turned up a few inches at the ends and one side; a wire is fixed to each end, or at proper places in the front, by which it can be drawn over the ground by a pair of horses or oxen. A light chain or rope is fixed so as to drag upon the ground a foot in advance of the front of the sheet-iron, by which the locusts are disturbed and made to jump, and as the machine is moving on at the same time, they drop upon it. A thick coat of gas-tar is smeared over the surface of the iron, in which the locusts are imbedded and stick fast. The vigorous kicking of the trapped insects, helps to keep the mass stirred up, and present a sticky surface. When the trap is full, the locusts are raked off into a pile, and set on fire and consumed. This machine can be drawn over young wheat without injury, as it is not heavy enough to break it down, and being flexible, conforms to the surface of the ground it is passing over. The engraving shows the manner of preparing the sheet-iron for this purpose. As the season when the locusts have formerly damaged the newly sprouted fall wheat is near at hand, it will be useful for many Western farmers to know of this cheap and effective method, which is not patented, and for which they may thank a farmer's wife of more than usual ingenuity and habits of observation.



TRAP FOR CATCHING LOCUSTS.

Hints and Helps for Farmers.

A Shaving Horse.—C. W. Yost, Lenawee Co., Mich., sends a drawing of a shaving horse for shingles, and one for other uses. The shingle horse, shown at figure 1, is made of a plank 10 feet long, 6 inches wide, and 1½ inch thick. A slot is cut through this plank, and a lever, made of a natural crook, is hinged into it. A wooden spring is fixed behind the lever, and is fastened to it by a cord. This pulls back the lever when the foot is removed from the step beneath. The horse may have four legs, but two will be sufficient, if the rear end is made to rest upon the ground. Figure 2 is made of a plank, 6 feet long, 10 inches wide, and 2 inches thick. Four legs, 2 feet long, are fixed in 1½ inch holes, as shown in the engraving. A bench, 18 inches long, 8½ wide, and 1½ thick, is fixed upon the horse. A slot, 8x1½ inches, is cut through the bench and the plank, and the lever, 2 feet 8 inches long, is fixed in this by means of a pin passing through the bench. Some extra holes are made in the lever, by which the hight of the head above the bench may be changed to suit different sizes of work. A head is put upon the lever, 6 inches square each way, but beveled off at the front. The foot board, 5x10 inches, is fastened to the bottom of the lever by a strong pin.

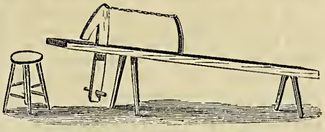


Fig. 1.—SHAVING-HORSE FOR SHINGLES.

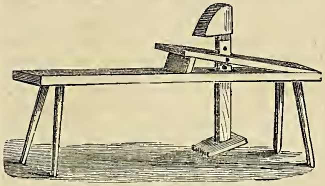


Fig. 2.—HORSE FOR GENERAL USE.

A Milking Stool.—H. S. Sperry, Iowa City, Iowa, sends a plan of his milking stool, (figure 3). The front of the stool is hollowed to receive the pail, which is kept in its place by a wire, fixed as shown in the engraving. The front leg has a projecting rest upon which the bottom of the pail is placed to keep it from the ground, and also from breaking away the wire by its weight. The milker may either sit astride of this stool, or sideways upon it. He also sends a plan of a method for raising or lowering

The Roof of a Hay Barrack by means of a lever shown at *D*, figure 4. *A* is the roof of the barrack; *B*, the post. *C*, is a pole, about 8 feet long which rests in a notch in the lever *D*, and which is placed beneath the corner of the roof. The lever rests upon the iron pin *E*, and as it is pressed down, or allowed to rise up, the roof is raised or lowered. It is then secured in the usual manner by an iron pin. The pin *E* is a spare pin, and is carried from one corner to another, as the roof is raised or lowered, one corner at a time.

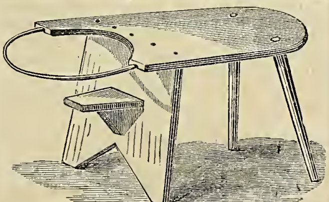


Fig. 3.—SPERRY'S MILKING STOOL.

The Requirements of Fish Breeding.

We continue to receive numerous applications, principally from the South and West, for information about stocking ponds and streams with fish, either trout or black bass. Nothing is more common than for the owner of a horse-pond or hog-wallow, a hundred feet across, and perhaps dry in the summer, to imagine that he has good facilities for raising his own fish, and supplying his neighbors. Two things are always necessary to make fish breeding a financial success: suitable water to raise them, and good markets near home. If one desires to breed trout for market, spring water in large volume is indispensable. The hatching can be done well enough with very little spring water, if it is pure, but the difficulty is in carrying the fish through the summer. In ordinary ponds without springs in them, trout will die, and this is one cause of the extermination of trout in many of the streams in the older States. The forests that once protected the springs have been cleared away, and the water in the summer is too warm for the trout. A large stream of water is wanted, not only to keep the trout cool, but to furnish food. Trout feed mainly on animal food, and the cheapest source of supply is usually the wastes of the fish and meat markets in the cities and villages, the lights and livers of slaughtered animals, and the offal of fish. If fish have range enough, they will cater for themselves. If confined to narrow quarters, they must be fed constantly, or they will devour one another. Food supply then is an essential element in the question of profit in fish culture—good water avails nothing for trout unless you have cheap food for them. Black bass can be raised in much warmer water than trout, but they must have room, or, lacking that, abundant supply of cheap food. A few might live in a horse pond, but there could be no profitable breeding. In almost any mill pond, with a constant stream, and a rocky or gravelly bottom, black bass will flourish. Of course, the larger the pond the better. Then fish must be well sold, to pay. They should be raised within easy reach of a large market.

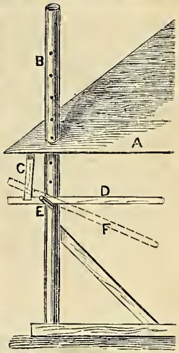


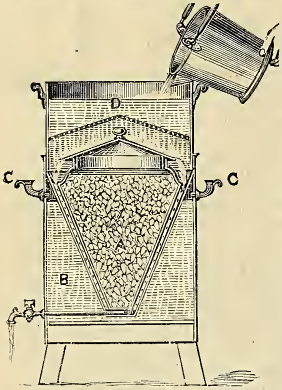
Fig.4. CORNER OF BARRACK.

A Method of Cooling Milk.

The investigations of many prominent American and foreign dairymen, have shown that milk, as well as its products, are much improved in quality by its rapid cooling immediately after it has been drawn from the cow, and in consequence of this knowledge, many devices are in use for the abstraction of the natural heat of the milk. It is known that milk, as it comes from the cow, is impregnated with volatile matter, which has a peculiar odor, not disagreeable when it is weak, but when it is concentrated it is very strong and exceedingly unpleasant. This, which usually exists as a vapor or gas, by concentration, appears as a yellowish oil, which has very disagreeable properties. It gives an obnoxious odor to anything brought into contact with it, and when allowed to remain in the milk it not only communicates this odor to the cream and butter, but it has the effect of producing rapid decomposition in them as well as in curd and cheese.

The well-known trouble of "floating curds" in the cheese dairy, is believed to be the effect of this gas, which is present in more than its usual quantity, either from an abnormal condition of the cow, or from some improper management of the milk. By exposing the milk to a low temperature, this substance is removed, and it is believed that exposure in a thin stream to a current of air, has the same effect; although this may be due to the cooling as much as to the aerating of the milk by this process. For the convenient cooling of milk in the dairy, we have the Hardin process, and the Cooley system; the latter having been reported by some extensive makers of choice butter, as being very effective. Both of these methods are based on reducing the milk quickly to a low temperature, which is maintained for some time. The objectionable animal odor is removed, and the cream is all separated in a very short time, sometimes in three hours, but frequently or always in eight to twelve hours. The cream is then in perfect condition, and the skimmed milk is sweet and pure, and may be made into a very superior quality of skim cheese. This is simply the effect of the rapid cooling, and the continued low temperature. To cool rapidly, is now known to be so necessary, that the best dairies are always supplied with a stock of ice for use in summer, and in winter, when the weather requires it.

There are several methods of cooling milk employed in dairies; the basis of most of them being to cause the milk to pass in a small stream or a thin sheet, over the surface of a metal receptacle filled with ice; others being to place the pans or pans containing the milk, in reservoirs of cold water. The former methods are the most convenient for common use, and the most readily available. A very effective milk cooler may be constructed in the following manner. A tin pail of conical shape, (*A*, in the engraving), is made to fit inside of a cylindrical pail having a conical lining. The space (*B*) between the sides of the round pail and the lining, is filled with ice water through a pipe having an enlarged mouth, (*C*). The inner pail is provided with a cover having a knob for a handle, and having a flaring edge, which overlaps the narrowed mouth of the pail. This manner of construction is necessary, as will be seen further on. A strainer, having the shape shown at *D*, is made to fit into the top of the outer pail. The inside part of the lining of this outer pail has a narrow spiral strip soldered to it in such a way as to make a channel around it, which performs ten or twelve revolutions before it reaches the pipe and tap, with which it is connected, at the bottom. When the inner pail is in its place, the side of this forms a part of this channel. The inner pail being filled with finely broken ice, with salt mixed with it, to reduce the temperature, if thought proper, is placed in the outer can, and the cover is put on. Then, the strainer being in its place, milk is poured into it, and dropping through the fine wire gauze, is freed from loose impurities, and flows on to the cover of the inner pail, from which it passes into the channel formed by the spiral shelf mentioned. As it passes through this channel in a small stream, the milk is exposed to the cold surfaces of both the inner and the outer pails, so thoroughly, as to cause it to issue from the pipe below at a very low temperature, and it may be passed through more than once, if necessary, to bring it down to 40 or 45 degrees, which is considered the most effective for the desired purpose of purification. The strainer is furnished with a handle upon each side, and the mouths of the pipes by which the outer pail is supplied with cold water, may be so made as to be used as handles for lifting the whole. The cooler should rest upon a stool about 2 feet high, so that a pail or pans may be placed under the tap to receive the cooled milk.



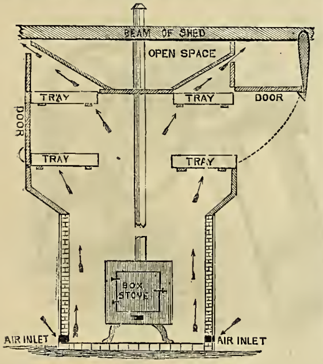
MILK-COOLING APPARATUS.

Feeding for Beef.

Feeding cattle must in the future be made an accessory of all grain or mixed farming. Dairying, grain and cattle raising, and special cultures, will undoubtedly form the three chief divisions of agriculture in the future. This is made necessary by the course of events, some of which are the gradual change of the soil from its new condition to one in which it must be fed systematically and scientifically; the increasing popular demand for meat, dairy products, and other choice domestic supplies, which are needed in a community whose manner of life is improving year by year, and also by the necessity of conducting our industries in a very economical manner, so as to meet the present active competition. All these events, with others, to which we need not refer, are combining to force farmers to feed live stock and make beef, mutton, pork, and poultry, of a high quality. Grain must be grown. There must be wheat, oats, barley, and corn, to supply the markets. But we can no longer grow these in a haphazard, slip-shod manner, but only in a regular skillful rotation with grass, green crops and roots interchanged, and liberal manuring is the first necessity for all these. We cannot afford to waste straw, chaff, or fodder, nor can we sell roots in any quantity, because of their bulk, and also for the reason that, except for feeding beeves, sheep, pigs, and cows, nobody wants them. It is needless to explain further to the farmer who has gone through some years' experience in growing grass and grains, how this necessity is rapidly forcing him to change his methods. There are some who have adopted the new order of things, and are satisfied with the results; there are others, however, who not seeing, or refusing to perceive, the pinch they are in, are going on in the old way, year by year growing poorer, more dissatisfied, and more given to complaining that "farming don't pay any longer." The trouble is not in their business, but in their poor management of it. We have frequently spoken of the need for better work, for higher culture, for enlarged yields, and for the most economical and skillful management. How to reach these, is the point, that they are necessary is nowhere disputed. We see plainly, that it is only by choosing the most desirable branch of farming, suited for particular soils, locations, and other controlling circumstances, and sticking to this; bringing to the chosen business all the study, skill, patience, and *capital*, that may be needed. We emphasize capital, because without this, all the rest are unavailing. A farmer without capital is a slave; with it, he has the means of utilizing all his other forces, or capabilities, to the utmost. No man now can be a farmer without sufficient capital, any more than he can be a banker, a merchant, or a manufacturer. A man may go on to the prairie or into the woods upon a fresh homestead with very little capital, and worry out a poor living, but he sells himself to the Government for five years for this privilege, and for that time, until he has the patent for his land in his hand, he is not a free man, but is in bonds; but to go into the business of farming profitably, capital is needed. When the particular branch is chosen, not from fancy, because this will not do, for there are dairy farms and grain farms, one of which will not suit the other business; and there are milk farms and market farms in the vicinity of cities, that can be carried on nowhere else, and upon which other sorts of farming will fail; but the kind of farming to be chosen must be that which can be most profitably carried on under the circumstances and in the locality. Grain growing and mixed farming, including the rearing or purchasing and feeding of live stock, must necessarily form the largest branch of agricultural industry. As we have said, the one cannot be conducted alone, but must be assisted by the other. It comes then to be a most important consideration, what kinds of animals are the most profitable to keep, and how are they to be fed with most profit. It is evident, from a view of what is going on in the live stock markets, that it cannot pay to feed an animal that requires four or five years to mature, nor one that will not be extra in quality and of heavy weight. No beef animal can now be reared or fed with profit, that will not reach a weight of 1,400 lbs. at least, at 30 months old. A grade Shorthorn, or Hereford steer, of 1,400 lbs. at 2½ years old, will sell for $70 to $80, if not more, and it is as certain as anything of the kind can be, that for many years to come the value of beef will not be less than now. The new foreign outlet for meat secures this. Such animals as these, fed skillfully in yards or pens, with a moderate allowance of purchased foods, that are always cheaply available, such as bran, mill stuffs, linseed or cotton-seed cake, with the roots and straw grown upon the farm, will produce an immense supply of the very best manure; and if turned off on the market at cost only, these animals will leave as profit sufficient manure to produce a grain and root crop. This ought to satisfy a good farmer; but there is more profit in this business than that, although many farmers may not be able to realize more. The subject merely touched upon here is broad, and we simply present it as one to be thoughtfully studied.

Drying Fruit—Fruit Dryers.

While drying is not in all respects the best method of preserving fruit, yet the ease with which it may be done, the little expense attending it, and the small bulk and portability of the product, are so much in its favor that it is not likely to be superseded to any great extent by other methods. There has been, of late years, a great improvement in the process of drying fruit, and a marked improvement in the quality of the product. In the primitive way of drying, the heat of the sun is depended upon, and not only is much fruit lost by long spells of cloudy and damp weather, but at the best the fruit is so long exposed that it assumes a dark color, and unless special care is taken, dust and insects tend to deteriorate the product. Still there is much fruit prepared, not only for family use but for market in this rude manner. By a proper arrangement fruit may be dried in the sun in a very unobjectionable manner; we described this some years ago, but will briefly repeat it, as in the absence of an apparatus for drying by fire heat, this is the next best. If one has hot-bed sashes, the trouble is very little; in the absence of these, ordinary window sashes will answer. A box is to be built of a size for the sashes, with a sloping top, and in all respects like a hot-bed frame, except it has a bottom, and should have legs to lift it several inches from the ground. The frame should be well made, all its joints, and the contact of the sashes with the top edges of the frame so tight that even very small insects can not enter. The sash should slope towards the sun. In the front or lower side of the frame, near the bottom, should be several holes for admitting air, and on the back side, near the top, others for outlets, and all covered with wire cloth. Fruit and vegetables placed in shallow wooden trays, or other receptacles, will dry much more rapidly than in the open air, and free from any contamination; besides, if the sash is in good order, no harm can come to it in case of a sudden shower. The need of some contrivance which will be quite independent of the weather, and which can keep at work in the night as well as the day, has led to the invention of a great number of dryers, most of which are patented. Some of these are small and portable, while others, for operating on a larger scale, require an outlay of several



SECTION OF FRUIT DRYER.

thousands of dollars to establish them. The simplest method of drying by artificial heat, is to place the fruit or vegetables in the stove oven with the door left open; sometimes a rack is arranged over the kitchen stove to hold the articles; both these will answer for small quantities, and are useful auxiliaries in drying by the sun, but require frequent attention, to prevent the fruit from being cooked as well as dried. All the patented dryers are constructed upon the principle of passing a continuous current of heated air over the substances to be dried, and the means of effecting this present a great variety. During the late war we visited an immense establishment for drying vegetables for the army. In this rooms were arranged with racks for holding a series of shallow trays—merely a wooden frame with coarse cotton cloth tacked on for a bottom. Near the floor was a series of pipes through which steam circulated, to supply the heat, and openings were made to lot in cold air below the pipes, and above were others to let out the air after it had passed over the trays. The dryers offered for sale have a stove for wood or coal, to heat the air, trays to hold the fruit or other matters, and ventilators above. These being the requirements, it will not require a great amount of inventive skill for any one who wishes to dry fruit or vegetables, to construct something which will answer the purpose. Many years ago, having suddenly to preserve a large amount of sweet-corn by drying, where there was no dryer obtainable, we converted a room into a dryer. An ordinary cylinder stove was set near the door, and the pipe run across the room, about two feet above the floor, to the chimney. Trays were made by tacking some discarded tin roofing to strips, and some horses knocked together to hold them directly over the pipe. The door being taken off and replaced by a temporary shorter one, allowed cold air to enter near the floor, and a window at the opposite end of the room was let down at the top, to furnish an outlet. The arrangement, even during a long storm, worked in a most satisfactory manner. An illustration more to the point, is furnished by Mr. F. Malcolm, Ont., Canada, who at a very little expense, extemporized a fruit dryer in his wood-shed, which has worked so satisfactorily for two years, and is so simple and cheap that he wishes others to have the benefit of it, and sends a sketch, giving a cross section, or as it would appear with the front removed. Mr. M. does not give any dimensions, except for the trays, but that is a matter that will vary with circumstances; we say that all he wishes to show is the principle upon which it is built. The enclosure is made of tongued and grooved boards, and protected from fire by lining exposed parts with brick and tin. A box stove is used for the heater, the pipe from which rises horizontally back to the rear of the dryer, turns upon itself, and then upward to the outside of the dryer and of the shed. This doubling the pipe gives increased heating surface, and saves fuel. Eight trays are used; these are 2 ft. 4 in. wide and 3 feet long; these go in pairs, end to end, consequently the dryer is 6 feet long on the inside. These trays slide upon cleats attached to the ends of the dryer, which are not shown in the diagram, nor is a central support which is provided for holding the ends of each pair. Though Mr. M. does not say so, we infer by the arrows showing the direction of the air current, that the bottoms of the trays are of slats; at all events, that would be found a great advantage. There is at each side a door running the whole length, to allow the trays to be put in and taken out; this door turns up, and is held in place by a hook, as shown at the right hand side of the diagram. An opening at each side next the floor admits the cold air, and outlets are provided above the doors for the exit of the air. The lower openings should be provided with covers, or shutters, by which the flow of air may be regulated. In the front of the dryer is a door through which the fire is fed and managed. As to the capacity of such a dryer, Mr. M. says: "There are eight trays, and it requires about 7 bushels of apples to fill them; in 24 hours the apples may all be put into two trays, leaving the other six to be filled; by working in this way, a family may peel and core about 5 bushels every evening. With a moderate fire the apples will be dry in 48 hours." In this and other dryers, a high temperature is not of so much importance as a free circulation of air, hence the ventilator, or exit, should be sufficiently large. As soon as air is heated, its capacity for moisture is increased, this passing over the fruit quickly takes up moisture from it, and passes on to the outlet to allow a fresh and, so to speak, thirsty portion of air to come and take up its share of moisture. Besides more certain drying, without chance to spoil, a dryer turns out a much handsomer product than can be made in the open air, as light is excluded, and the fruit remains much lighter colored. Knowing the principle involved in the construction, and by the aid of such hints as are given by Mr. Malcolm, no one should find any difficulty in constructing a fruit dryer. It is not necessary to built it in a shed, as one may be put up by itself with a roof over it, which should project all around sufficiently to allow of operating in wet weather. Indeed it is much safer to have it quite detached from the dwelling, as woodwork, exposed as this would be, to a high temperature for many days or weeks, becomes so thoroughly dry, that it will be very inflamable; care is required in this respect, whatever wooden dryer may be used. If small articles, like berries or green corn are to be dried, the bottoms of the trays may be of some loose fabric, or preferably of wire cloth, made of wire thoroughly tinned.

A Frost-proof Stable.

It is entirely practicable, even in our northern climate, to make stables frost-proof, while they are occupied with cattle. We all know that this can be done, by packing the sides with sawdust, tan-bark, sea-weed, straw, or other good non-conductors. But we visited a barn last winter in which it was done, by simple faithfulness in building. The stable was immediately over the basement, and had for one of its sides the bank-wall. This was pointed with cement. The other sides were made of tongued and grooved inch pine boards, and battened, the lumber well seasoned, and painted. The windows and doors were close fitting, and there was no crevice left where the wind could creep through. The trap-doors, through which the manure was passed below, were perfectly tight. We were surprised at the agreeable temperature as we entered the barn on a bitter cold day. It seemed as if a stove or furnace must have been used in the building. But the proprietor said that the animals were the only stoves in use, and the manure had hardly been frozen even in the zero nights. He spoke with great satisfaction of the economy of such a stable. It saves greatly in fodder. All the hay and grain that are used to keep up animal heat in the open air in winter, goes, in such a stable, to the production of flesh, fat, and milk. The saving is about one-third the value of the fodder consumed. The flow of milk is kept up, and butter is made all through the season, when, on most farms, the cows are entirely dry. Animals fatten readily under such conditions, and can be sent to market when prices are at the highest notch. The manure goes, with the animal warmth in it, to the compost heap to help the fermentation of the mass beneath. The water is never frozen. It costs but a little more while we are building, to have the job thoroughly done. The investment is a security stock, and will never fail to pay dividends. Holes and cracks in the siding and floor are holes in the purse. Those who are building, or are about to build, will do well to consider these things. CONNECTICUT.

How to Treat Animals with Broken Legs.

BY DR. W. C. COLEMAN, LATROBE, PA.

It is considered a very serious accident for a horse or mule to get its leg broken, and as a rule, when such an accident occurs, the animal's life is sacrificed, unless it be occasionally, when much value is at stake. Various modes of treatment have been suggested from time to time, the greater part of which have been attended with much trouble, and generally considerable expense, hence have not been brought into general use. It may be possible that the mode of treatment I am about to suggest, has been tried by others, but if so, I am not aware of its being extensively used, therefore I venture to offer the following on the subject. Of late years the "Plaster of Paris Dressing" as it is called, has been revived, after having been discarded for a long time, and with the present improved mode of applying it, is considered one of the very best modes of treatment for fractures of human limbs, and especially when applied to the lower extremities. Its advantages have been fully tested, both in hospital and private practice, and the results have been the most satisfactory, where the ordinary precautions were observed. I have had some experience with this dressing, and have invariably had the most gratifying results; a full report of two cases may be found in Penn. State Medical Association Transactions, 1875, and the Reports of Bellevue Hospital, N. Y., abound with cases which have been treated there within the past three years.

I am not a veterinary surgeon, neither by education nor practice, but I have long seen the need of some efficient and practical way of treating the fractures of animals, especially those of horses, and having expressed my views on the "plaster dressing" as being applicable to both man and beast, a personal friend took occasion to test my sincerity, by calling on me to dress a fracture of a young and valuable mule, which had fractured the right leg, between the hoof and pastern joint. I applied the plaster by the usual method for fractures, by preparing my rollers in the following manner. I took six rollers, each two inches wide and six yards long, and while I unrolled them I dusted both sides with dry Plaster of Paris. I re-rolled my bandages quite loosely. This being done, and armed with a basin of luke-warm salt water, we proceeded to reduce the fracture by binding the leg at the knee-joint, and having two strong men make extension and counter-extension by pulling steadily in a direct line, and on finding the injured parts well in apposition, I applied a piece of U. S. blanket from the knee to the hoof, and with my roller well moistened in the salt water, began applying it in the ordinary way from below upward, at the same time keeping a close watch on my extension and counter-extension. After the leg from the knee, and including the upper half of the hoof, had been thoroughly encased in this box of cloth and plaster, I directed the extension to be kept up until the plaster should be firmly set, and keep the leg flexed for the first twenty-four hours. This having been done, the mule received no further attention, than to be kept confined to his stall, and the usual supply of plain food and drink was given regularly, such as hay, oats, and corn, just in their whole form, and no medicine of any kind being used either externally or internally. At end of seven weeks the plaster dressing was removed, and the union of the parts was complete, with no deformity, except a slight enlargement at the point of union, which will probably all be absorbed and disappear. The mule did not incline to injure the dressing with his teeth, although permitted to lie or stand, as he desired, I had, however, directed a mixture of common tar and pulverized aloes, equal parts, to be applied to the plaster dressing, should there be any tendency to use the teeth. The success attending this very simple and easy mode of treating fractures in this one case of an animal, usually more vicious than the horse, has led me to believe that "Plaster of Paris," properly applied, must be as successful in the treatment of fractures in animals, as it has been in those of man. It is certainly worth the attention of the public, and more especially that of all educated veterinary surgeons.

[The above method of treatment as applied to veterinary practice, is not new; we gave an account of it in May, 1873—so long ago, that it is well to call attention to the matter anew, as it is a treatment that is successfully practised. Bandages of thick, brown paper wetted in glue water, have also been used successfully, and it is now no longer the practice to kill an animal which happens to fracture a limb that can be bandaged. The use of slings prevents any displacement, even with restless, nervous animals. The application of surgery to disabled animals, is often of great value, and is frequently found effective. Even amputation has been successfully performed; a valuable Short-horn cow was recently saved in this manner, and when furnished with a wooden leg, moved about the pasture as easily as before. It should be borne in mind that the plaster to be used is not the ordinary land-plaster, but calcined plaster, known as Plaster of Paris, and used for hard-finishing walls, etc. Ed].

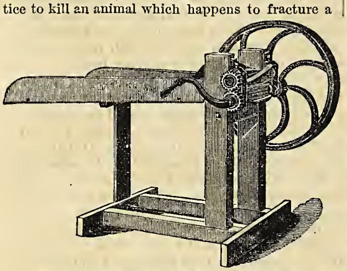


Fig. 1.—GALE'S COPPER-STRIP CUTTER.

Some Useful Fodder and Root Cutters.

The saving made by feeding cut, instead of long fodder, is estimated by many careful and exact farmers at one half. From our own experience during many years, we are satisfied that, when long hay and unground grain are fed to horses or oxen, or whole corn-stalks and dry meal are fed to cows, or calves, double the quantity will easily be consumed and wasted together, that need be given, to keep the stock in an equally good condition, if the fodder is cut, and the grain ground. This is a very important saving, with which the extra labor involved in cutting and preparing the fodder, is inconsiderable. This fact is now so well known, that there are few farmers, stock breeders, or other persons, feeding many animals, who do not use fodder cutters. To meet the constantly increasing demand for these machines, a very large variety is manufactured, and improvements are constantly being made in their construction, so as to secure greater durability and efficiency. We here illustrate some of the most approved forms of these machines. Not having space to mention more than a few of those that are worthy of notice, we do not wish it to be understood, that these are all that are useful or desirable; on the contrary, there are many that are equally good and useful, made by other manufacturers in different parts of the country, that we have not room to mention at this time. Figure 1 represents the "Gale Copper-strip Cutter," made by the Belcher and Taylor Agricultural Tool Company, of Chicopee Falls, Mass. This is an old, standard machine, which we used some years ago with entire satisfaction. The spiral knives of this machine cut against copper strips upon the upper cylinder, which protect the blades, so that they will work for years without grinding. The smallest size will cut one bushel of hay, or fodder, into chaff an inch in length, in a minute. It will cut corn-stalks, with the ears upon them, or hay or straw. Another machine which we have used satisfactorily, is the "Baldwin American Fodder Cutter," (fig. 2,) made by C. Pierpont & Co., New Haven, Ct. The knives of this machine are spiral, and cut in opposition to an iron plate, in the manner of a pair of shears. It is self-feeding, with iron rolls, which are operated by adjustable gearing. The smallest size is able to cut 110 pounds of fodder of any kind in an hour, in lengths from half an inch to two inches; the largest size of hand-machine will cut 700 pounds per hour. The largest size, operated by power, is able to cut two tons of fodder in an hour. A machine made in Ohio is shown at figure 3. This is the "Silver & Deming Company's Feed Cutter," made at Salem, Ohio. It was awarded several first premiums at fairs in Ohio, Pennsylvania, Indiana, and other States. Its special recommendation is a provision, by which, in case any stone, piece of iron, or other hard substance should accidentally come between the knives, they stop, although the fly-wheel still revolves. This is done by means of a friction cone upon the fly-wheel shaft, but this is only provided when it is specially ordered as the "safety fly-wheel." A lever cutter, made by the N. Y. Plow Company, New York, is shown at figure 4. This is one of the old, standard machines, which is approved by some farmers for its simplicity, and the impossibility of getting out of order. It has also the merit of being very low priced.

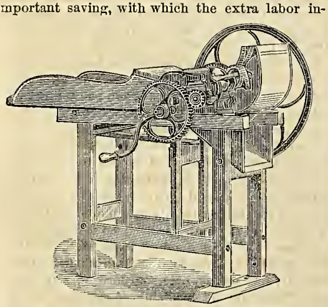


Fig. 2.—BALDWIN'S AMERICAN CUTTER.

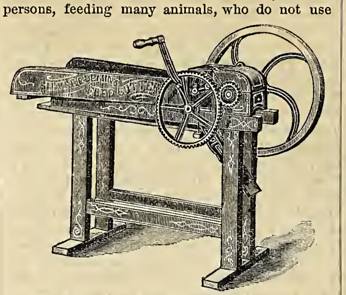


Fig. 3.—SILVER & DEMING CO.'S CUTTER.

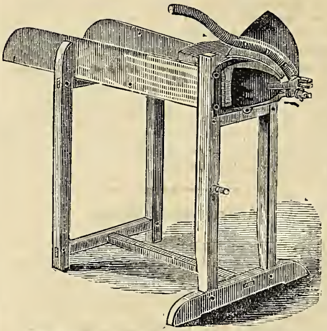


Fig. 4.—N. Y. PLOW CO.'S LEVER CUTTER.

When roots are fed, a cutting machine for these is as useful as a cutter for fodder, and it is also necessary to the safety of the animals, in preventing choking that might occur by swallowing large pieces. An excellent root cutter, made by the New York Plow Company, is shown at figure 5. This machine was awarded a medal at the last exhibition of the American Institute. It is made to cut the roots into thin slices, a shape in which they may be safely and economically given to cows, sheep, hogs, or horses. A similar machine, which cuts the roots in shreds, is also made by the same parties. The engraving shows the manner of construction, and the shape of the knives, and the box. The box is shown by the dotted lines, so that the knives, and cylinder upon which they are fixed, can be seen. A machine of somewhat similar construction, made by the Belcher & Taylor Company, of Chicopee Falls, Mass., is shown at figure 6. This machine cuts a bushel of roots in a minute. When thousands of bushels are fed in a season, the saving in time and labor is very great, and when but one cow is kept, and half a bushel of roots only are fed every day, it will pay to use one of these machines for the mere saving of time and labor. Now that every hour of a farmer's time is needed, to keep his farm up to a profitable condition of working, every time-saving and labor-saving machine is an absolute necessity to him. It no longer pays to do things by slow hand-work, nor to waste any of our resources, because the measure of the profit on the farm is now the cheapness with which the products are raised, and the farmer who can produce his crops more cheaply, than another can his, can undersell the latter, and still make a profit, while the latter loses money, or in other words, receives smaller pay for his labor. The one who works the most rapidly and effectively, now gets the best pay, even if he is working for himself.

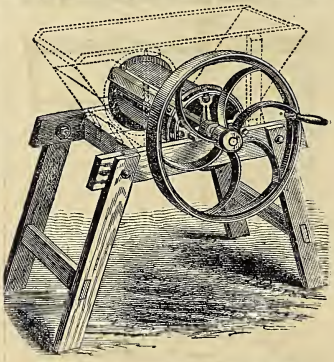


Fig. 5.—N. Y. PLOW CO.'S ROOT CUTTER.

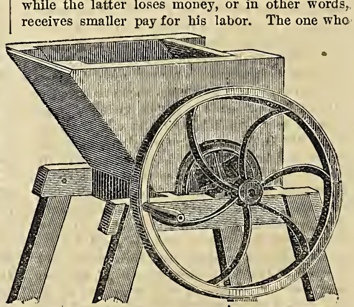
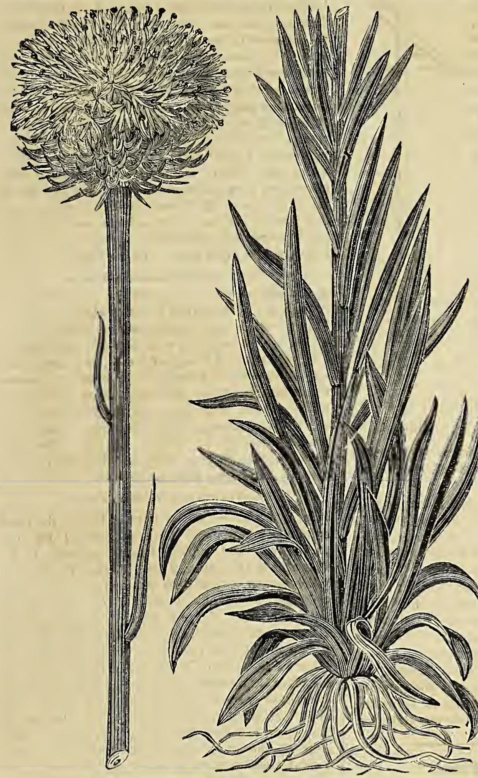


Fig. 6.—BELCHER & TAYLOR CO.'S ROOT CUTTER.

The Tufted Marshallia.



THE TUFTED MARSHALLIA.—(*Marshallia cæspitosa.*)

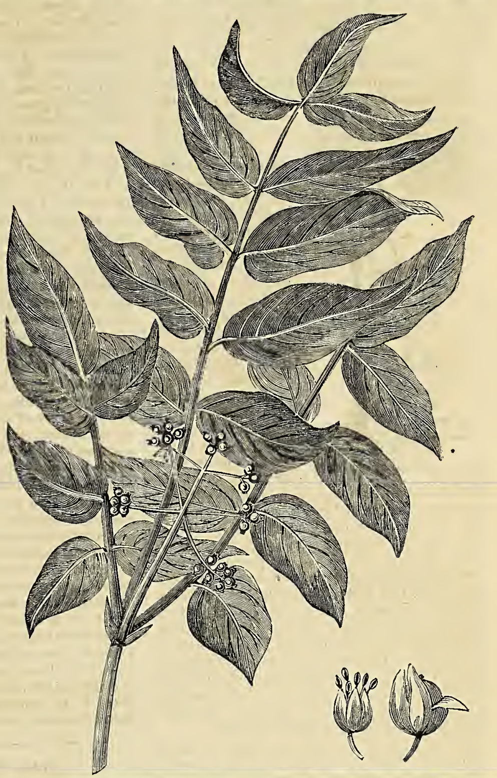
We like to see the names of American Botanists commemorated by American plants, but we have always thought it a pity that good old Humphry Marshall should have had his name attached to a genus of low herbs. The author of "The American Grove" (*Arbustum Americanum*)—a description of our native forest trees and shrubs, published in 1785, and regarded as the first botanical work by a native of the country—should have had a genus of trees dedicated to him, rather than the humble composite which is now known as *Marshallia.* Those not very familiar with such matters would hardly suppose, either from the plant itself, or from the drawing here given, the Marshallia to belong to the Composite family, as the best known among those, have the heads of flowers surrounded by a circle of conspicuous ray-flowers, as is strikingly seen in the Sunflower. Indeed, the heads of flowers strongly resemble those of a Scabious, or a Thrift, though a close examination will show the structure peculiar to the composites. Four species of Marshallia are given in the Flora of North America, all being southerners, and but one reaching as far north as Virginia. The one here figured, the Tufted Marshallia, *M. cæspitosa*, belongs rather to South-west, it being found on the moist prairies from Arkansas and further West to Texas. The narrow leaves, of the shape shown in the engraving, are crowded to form a leafy tuft at the base, from which arise the flowering stems, a foot or more high, which are leafy below and nearly naked above, and each bearing a somewhat hemispherical head of flowers, like that in the engraving, which is of the natural size. The small florets composing the head are all tubular; these in the other species are pale blueish or purplish, but in this of a light flesh-color. Though a native much further south, this species is hardy near New York, blooming in June; while it can not be regarded as a very showy border plant, it is an exceedingly neat one, and its modest flower-heads, being on long stems, work up readily into summer bouquets. If it were not half so attractive as it is, we should take pleasure in cultivating the plant, because it bears the name of one of the botanical worthies of the past century.

The Mantchoorian Cork-Tree.

BY PROF. C. S. SARGENT, DIRECTOR OF THE ARNOLD ARBORETUM OF HARVARD UNIVERSITY.

This tree, a native of the country watered by the Amoor River, where it was discovered some twenty years ago, by the Russian Maximowicz, is known to botanists as *Phellodendron Amurense*, the generic name (from the Greek *phellos*, cork, and *dendron*, tree,) having been bestowed upon it on account of its rough, corky bark. The largest specimens M. Maximowicz noticed were some 40 feet high, with straight stems, and round, dense heads of handsome foliage. It bears opposite, unequally pinnate leaves, 15 to 20 inches long—the leaflets, of which there are 11 to 13, are lanceolate, and sharply serrate. *Phellodendron* is diœcious, that is, the male and female flowers are borne on separate plants. The flowers, which are small, and inconspicuous, appear at the extremities of the branches, in rather loose spreading clusters, and these, on the female plant, are succeeded by black, pea-shaped fruit, thickly covered with glands containing a bitter-aromatic oil, common to the great natural order *Rutaceæ*, or Rue-family, to which *Phellodendron* belongs. This tree is known in cultivation in this country by a male and female plant in our Arboretum, raised from seed sent to Cambridge from St. Petersburg, soon after Maximowicz's discovery. These specimens, although in a very exposed situation, are perfectly hardy, and are already some 16 feet high, having flowered, and borne fruit last year for the first time. The fact that the trees which have flowered in Europe up to the present time, are all males, adds to the interest and value of our female plant, which will be called on to supply seed to the lovers of rare trees, both at home and abroad. A large number of plants have already been raised from last year's seed, and the still larger crop of the present season, will be carefully collected, and as widely distributed as possible to all who desire to cultivate this beautiful tree.

When we remember the long list of our native trees rarely met with in cultivation, in spite of their beauty and varied usefulness, it seems a thankless task to recommend for general introduction a new comer, whatever merit it may possess. American planters move in very narrow ruts, and confine their selections to a small number of plants, many of which are but little suited to fulfill the objects for which they are employed. The Mantchoorian Cork-Tree, as we are forced to call it, for want of a better English name, has, however, a special claim to popularity. It belongs to a class of small trees and shrubs, which, like some of the Sumachs, and the Chinese Ailanthus, present a tropical or rather sub-tropical appearance, and are therefore valuable to contrast with our more common forms of arboreal growth. Its freedom from the defects which render the Ailanthus unfit for ornamental planting, its superior size to any of the Sumachs, as well as its rapid growth, and great rarity, make this tree worthy of a place in even the smallest plantation. The accompanying figure represents a branch of the female plant, much reduced in size, and the male and female flowers about twice the natural size.



THE MANTCHOORIAN CORK-TREE.—(*Phellodendron Amurense.*)

Helps in the Fruit Harvest.

The old practice of clubbing the trees, to make them give up—or rather down—their fruit is well nigh a thing of the past. When it is shown that the careful handling of fruit actually pays in dollars, people learn, though slowly, to adopt better methods. Picking by hand has generally taken the place of shaking and beating the trees. In picking,

Ladders are needed, and for all trees of moderate size, some form of the step-ladder is preferable to any other. In an article last month on the "Peach Harvest," we illustrated ladders of this kind, and gave an easy method of making a rough one. In former volumes, there have been given various kinds of ladders, and methods of rendering an ordinary ladder self-supporting. See Jan., 1869, and earlier. Mr. Adam Bruker, Dauphin Co., Pa., sends a sketch of a home-made ladder, which he finds useful in the orchard, which is given in figure 1. A ladder similar to this, in having but one upright, has long been in use in Europe, but his is much simpler, and may be made by almost any one. A pole of the desired length is split at its lower end, and furnished with rungs, reaching between the two parts below, and passing through the unsplit portion above. The pole may be of any green wood that will split readily, but the rungs should be of tough, well seasoned wood, and an inch and a half through. We would suggest that an iron ring be placed upon the pole, or a bolt be put through, at the point where the split terminates. A ladder of this kind is much more easily placed in the branches of a tree than one of the common form, and being so wide at the base, will stand more firmly, especially on uneven ground.

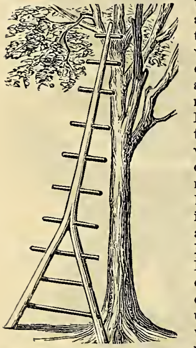


Fig. 1.—ORCHARD LADDER.

An Orchard Hook will sometimes be found convenient. This, as shown in figure 2, is a wooden rod, with an iron hook at one end. A piece of wood a few inches in length, slides upon the rod, and has a strong peg near the end. By placing the hook over a branch, it may be drawn near to the picker, who catches the sliding piece under a lower branch, pushing the piece along the rod as may be necessary; the pressure coming upon the peg, the sliding piece is held by the side-wise strain and can not slip. By the use of this, the picker can often avoid moving his ladder in order to reach the fruit, and it leaves both his hands free.

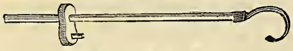


Fig. 2.—ORCHARD HOOK.

Fruit Pickers have been invented in great numbers, and the amount of ingenuity expended upon them is all out of proportion to their real usefulness. Some are made to cut and others to pull off the fruit; some catch the fruit in a little bag at the upper end of the affair, and others let it run down through a long sleeve into the hand or basket, and so on in great variety. Still, where fruit is upon a slender branch—and the finest specimens are often provokingly out of reach—some help of this kind comes in play, but in picking for market, they make too slow work. We have seen a very effective picker extemporized in a few minutes. An old fruit-can had a long V-shaped notch cut in the side; by means of a large-headed nail put through the bottom, the can was made fast to the end of a pole; a handful of grass put into the can, made the picker complete. The stem of the fruit being caught in the notch, it readily parted from the tree, and the grass prevented all bruising. Mr. S. A. Duke, of Drew Co., Ark., sends a drawing of an implement, which he calls a "Jack-knife Picker," because a man or boy can readily make one with his pocket knife. This is not patented, but will no doubt answer quite as well as those that are. The engraving, figure 3, will show how it is constructed. A light lath, or other strip, ½x1½ inch, and about 10 feet long, is fitted with a projecting piece at the end; a lever, also curved at one end, passes through the long strip near the top, and is provided with a spring of hoop-skirt wire to keep it open. The lever is operated by a stout cord, such as a fishing line, which is attached to one end, passes through the pole, down through another hole, and attached to one end of a lever which is at the lower part of the lath. By depressing this lower lever, the cord moves the upper one, and it is made to grasp a pear or other fruit, pick it and hold it until it is placed in a basket, which for convenience should be placed from the operator as far off as the length of the picker. We would suggest that much friction on the cord would be avoided by running it through a couple of screw-eyes, screwed into the lath.

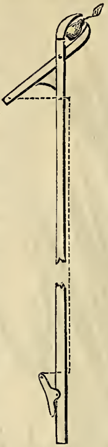


Fig. 3.

Baskets used in picking, should be of medium size, as the larger the basket, the greater the risk of bruising its contents. Some orchardists have them small enough to be turned inside of a barrel, so that when filled, they may be emptied into the barrel in such a manner as to allow the fruit to roll out gently, rather than to fall from the top of the barrel. It is convenient to have the handles furnished with hooks, by which they can be hung to a branch; these should have a ring at one end large enough to allow it to slip along on the handle, and so closed that it will not drop off the hook and be lost. It is sometimes convenient to hang the basket to a strap, which passes over one shoulder.

Notes from the Pines.

Last year was noted for its long and severe drouths, and this season has, thus far, (early August), been as strikingly in the other direction. Not only have rains been frequent and abundant, but we have had periods of several days at a time, when the air was surcharged with moisture. As a consequence vegetation presents a great contrast to its appearance last year, and shows the most vigorous growth. But there are some exceptions to the general condition. These moist, hot days, are especially favorable to the growth of those fungi which prey upon other plants, and as a consequence we have an unusual manifestation of

Grape Mildew.

This has had so many days especially suited to its rapid spread and development, that I fear that all our sulphuring will not avail, and the splendid promise of a crop of grapes will show a meagre fulfillment, for with this dampness comes not only mildew, but rot....The first year that our clump of

Thready Yucca, Bear's Grass, Adam's Needle,

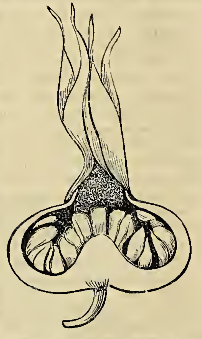
or by whatever name you choose to call *Yucca filamentosa*, bore fruit, the seeds were saved and a lot of them were sown. In a couple of years we found that we had on hand enough yuccas for a plantation, and after edging a cross path in the garden, the rest went to the heap. Here and there a plant showed flowers last year, but the present season, the fourth from the seed, there was a general inflorescence. A row of 200 feet in length, closely set with this yucca in full blow, is a sight worth going far to see. It is interesting to note what a variety of plants were produced from the same lot of seed. Some plants are nearly twice as large as others, while there is a marked difference in the width and stiffness of the leaves, amount of threadiness of the margins, and in the shade of the green. Indeed, in looking at the extremes here presented, one can hardly wonder that several species have been made from the varieties. The differences in the flowers are not so striking as those in the foliage; in some plants the flower stalk is reddish throughout; the panicle or cluster is more or less branching in different individuals, and there is considerable variation in the size as well as the shape of the flowers, some being nearly globular; so far as color goes, there is considerable difference in the purity of the whiteness, a few being of a clear "paper white," while the majority are more or less tinged with green, and now and then one with just the tips of the divisions of the flower slightly touched with dull purple. If one could only induce a plant to put some red into its flowers as well as in its stalks, it would be a great gain. We have had

The Narrow-Leaved Yucca,

Yucca angustifolia, in flower for the first time, though the plants must be six or eight years old. This species, which comes from west of the "Father of Waters," has leaves only half an inch wide, or less, very stiff and sharp, of a dull, pale green, and its flower cluster being seldom branched, makes much less show than the other. This is also a variable species, some forms having very large flowers, but those on our two plants were not noticeably unlike those of the common species. The seed vessel is about twice as large as that on the Thready Yucca....In Sept., 1875, you figured

The Ramanas Rose of Japan,

from specimens sent from here. I hold to the good opinion of the plant there expressed; its very dark green and robust foliage, appears to be shunned by the ordinary rose insects; its flowers, which appear earlier than those of any other rose, make up by their abundance and prolonged bloom—it having now, the first week in August, several flowers—and especially by their fragrance, the lack of that doubleness that most persons consider so essential in a rose. I know that I am laughed at for admiring a single rose, but I have an advantage over those persons, as I can enjoy the double ones as well as they, and have besides the pleasure of the others, in which they can see no beauty. But, after all, the great value of this rose as an ornamental plant, is in its fruit, and this is why I refer to it now. When I sent the specimens for an engraving, the fruit had not formed, and I sent the artist a French plate as a guide for the fruit, which was there represented as globular, and it is so given in the engraving and description in 1875. It appears that there is a considerable variety in the shape of the fruit; it is sometimes globose, but in both my white and red-flowered plants the fruit is remarkably flattened; the larger specimens are an inch and a half broad, and only half as long, (or short), and are crowned by the divisions of the calyx, which are an inch and a half in length; the engraving, giving a section of the fruit, shows these. In Siebold's engraving, the young fruit is shown as very prickly, but this also varies, and in mine the surface is bright, entirely smooth, and shiny, and at first orange-color, which turns to scarlet. This rose is found wild in parts of Japan, and is generally cultivated there and in Northern China. "Ramanas," given by Thunberg as its Japanese name, is, according to Siebold, incorrect; he says it should be *Hama nasi*, which means "beach pear," but as



Ramanas has been accepted in various works and catalogues, at home and abroad, as the common name, it is not worth while to attempt to change it, especially as it has the advantage of being one word instead of two. It may commend this rose to those who are fond of the antique, to know that as early as the year 1100, the court ladies made a perfume of its leaves, though I am sorry to add that they had the bad taste to add camphor and, worse yet, musk!....Among the noticeable plants now in bloom, is what is known in the West as

The Kansas Gay Feather,

though it is not especially Kansan, nor is it feathery, but as the name is more likely to be popular than *Liatris pychnostachya*, I will not find fault with it. Our clump is well established, and I doubt if Kansas or elsewhere can show it in finer condition; the flower-stalks stand nearly, if not quite, 5 ft. high, and for half their length are a dense cylindrical spike of the liveliest rose purple; the effect in the mass is superb.....I am every year more impressed with the mistake we—that includes all Americans—make, in neglecting our native lilies, but more especially our

Superb or Turk's-Cap Lily,

(*Lilium superbum*) which is found in rich meadows from Canada to Georgia, and which almost any one can, with a little trouble, find in flower, and mark so that the bulbs may be taken up in the fall, and removed to the garden. It will do fairly in ordinary garden soil, but if one would see what it is capable of, give it a light soil with plenty of muck or peat, and then—let it alone. Year by year the bulbs will gain in strength, and throw up more vigorous stems, and when one has an established clump, he will admit that Linnæus hit it exactly, when he wrote its name *superbum*. In favorable situations it may be met with in the wild state, growing 6 feet high, with 20 or more flowers, but in cultivation it has reached 8 and 9 feet, with 40 or more. The divisions of the flower are handsomely recurved; they are orange-colored at the base, and thickly spotted with violet purple, while the upper and larger portion is of a peculiar red, which has been by some termed "mahogany color," the general effect being exceedingly rich. Here is a plant within the reach of almost all, who travel about the country with open eyes, and will take a little trouble to secure it—and if those who would gladly have fine things, if they could only afford them, will get a good clump of this lily, they will have little reason to regret that their means will not allow them to indulge in costly exotics.

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How Plums are Made into Prunes.

Oregon and California being fortunately as yet free from that destructive pest to all stone fruits, the curculio, the plum flourishes there, and produces most generous crops. We have had several inquiries from these States, asking how plums are converted into prunes. As this is outside of the line of our experience, the best we can do is to give the methods described by French authors, and followed in the country from whence we derive nearly all of this kind of fruit. It is generally supposed that any plums may be dried into prunes; this is a mistake; in France the varieties fit for the purpose form a distinct group, and in districts celebrated for the quality of their prunes, such as Tours, Angern, Provence, etc., they cultivate some special variety. The leading varieties are the Brignolles, D'Angen, Quetsche, and Perdrigon Violet, which are but little known in this country; the St. Catharine and Pond's Seedling, well known European varieties, and the Washington, of course American, are sometimes cultivated, but to a limited extent, in some localities. The plums are allowed to get so ripe that they fall from the trees, and to prevent injury by the fall, the ground beneath the trees is either made soft by working with the plow and harrow, or is covered with straw. The fruit, which is picked up every day, or every other day, is washed if soiled, and then spread upon wicker trays made for the purpose; these are either circular, or egg-shaped, or rather the shape of a battle-door, the narrow end coming to a point to serve as a handle; they are about 20 inches across. The drying is done by exposure to both the sun and to fire heat, ordinary baker's ovens being used, or ovens are especially built for the purpose. The object is, to dry the fruit as rapidly as possible, without breaking the skin. The fruit, in a single layer in the trays, is exposed for several days to the sun, where it is carefully turned from time to time, in order that all parts may be equally exposed. Neither of several French writers mention just how long this continues, but as all agree in saying it is for the purpose of toughening the skin, we infer that it differs with circumstances, and that the proper condition is only learned by practice. The trays of fruit are placed in an oven heated from 165° to 175°, (Fah.), and the mouth of the oven securely closed. At the end of 24 hours the fruit is taken out, and when completely cold, it is turned upon the tray. In the mean time the oven is re-heated, this time from 212° to 230°, and the fruit placed in again, where it remains as before; after another cooling and turning, the oven being heated to 255°, a third drying is given, and this generally completes the process, though it is sometimes necessary to return the fruit to the oven once more. The prunes are known to be properly done if they have a certain degree of elasticity when pressed by the fingers. They should have perfect skins, which shine as if varnished, and be free from all scorching. In France it is customary for the growers and dryers of the fruit to sell it to the packers in Bordeaux and other markets, where three grades are recognized, founded on the number of prunes required to weigh 500 grammes, or a trifle over a pound and a quarter. If 70, or less, weigh this, they are "fine," if it requires 80, they are "medium," and "small" if 90 or more are required. In packing, the fruit is assorted in the same manner, the "superfine" being selected prunes, 30 to 35 of which weigh 500 grammes, and down through several grades. In particular localities the process of drying is varied; in Provence, the fruit is scalded before drying. In some of the finer kinds the prune, before entering the oven for the last time, is rounded, by turning the stone within, and flattening down the ends, without breaking the skin. The Brignolles prunes have the fruit peeled, strung upon sticks, and dried in the sun; when nearly dry the stone is removed, and the drying finished. For the common prunes, such as are imported in casks, the fruit is shaken from the trees, and does not receive such special care in drying. It is important that those on the Pacific coast and elsewhere, who wish to undertake the manufacture of prunes, should experiment with varieties known to be suited to the purpose. We have no doubt that, at least for a common article, some of our different fruit dryers will answer their purpose as well as the ovens used in France.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Telling Stories to Children.

Most persons who read "Helen's Babies," felt some sympathy for "Uncle Harry," whose insatiate nephews made such frequent demands for stories. A "Budge," or a "Toddie," by any other name, is quite as unreasonable and unseasonable in its requests. "Uncle Harry" resolved never to teach any children of his own such a means of imposing upon the good nature, and destroying the leisure of grown up people. I came to that decision myself when I had the care of a dear little niece for a few months many years ago. At least I resolved never to begin *making up* stories for another child. If you once let a child know that you can manufacture stories to order, where can you find a stopping place? If your child has a nurse, and you are not with it much of the time, you ought to be able to make up or repeat stories for it frequently. But if you have the little one's constant presence, you must at least confine the story telling to particular times and seasons—bed-time or twilight stories. Some of us who have already too great a demand upon our feeble brains in the way of household plans, money-getting and money-stretching perplexities, baby-tending and child-training, and family management generally—we can hardly afford to tell stories at all, but find it far easier to read them from good books and papers. You cannot get the attention of the little ones so well when reading as when talking to them. You have to manage to keep the youngest one quiet while reading to a group. So long as there is a picture to look at, all goes well, but when you must turn over the leaf, the story is spoiled for the wee one. But if he will not keep still, he must be banished to another room. A few seasons of exile will secure tolerable quiet on his part, even when he cannot understand the story. But he wishes to understand, and it is well to throw in some lively running comments adapted to his comprehension.

In making up stories for a child, one must be careful to avoid too sensational a style. I well remember into what a fever of excitement I worked my little niece, by one of my stories about a careless little boy whose thoughtlessness was the cause of his father's death. She lay and cried about it after she should have been asleep, and begged to know "Why *did* Johnny do so?" In vain did I continue the story, and try to carry it on to a more cheerful ending—I could not bring the dead father back to life, and my very sincere little auditor could get no comfort from anything I could tell her. I concluded then only to repeat ready-made stories to children, Bible stories, historical tales, mythological fables; for I supposed that no generous person would refuse to tell stories when asked.

I have more than once referred to a woman I once met who more than any other filled my ideal of what a mother should be, in her conduct with her only child, a boy of 3½ years. I asked her if she told him stories much. She surprised me by saying that she never told him regular stories, though she talked with him as a companion about all sorts of things. She said she didn't want him to know that *she could* "tell stories," as he now thought story-telling a special talent of his auntie, and was inclined to give her little rest from that business whenever he found her disengaged.

The beauty of it is, that if you only give children the raw material for stories, facts of one kind or another, when various subjects interest them, they very naturally fall to work and make their own stories, more or less like those you read to them perhaps. I like their fairy stories better than those which grown up people tell. Every day this summer I get a deal of quiet entertainment out of the stories made over picture books by a little girl of five. These little stories show no precocity of talent or remarkable genius, but I never happened to see another child with such a necessity laid upon her for spinning little yarns to herself.

Some parents condemn the classic Mother Goose stories as utterly bad. I think they have their place, for the rollicking, frolicksome hours, told in sing-song funny style, as recognized nonsense. I don't like the books with their wretched illustrations, and some of the "melodies" themselves are too tragic in their nature, but it is a part of a "liberal education" to know Mother Goose and all her class of foolish-funny literature; and to hear and learn much better things at the same time.

A Mop Wringer.

My remarks on Floor Cleaning, in the May number of the *American Agriculturist*, called forth a letter from the Oneida Community, accompanied by a photograph of the wringer used in that institution. It is unpatented, and is not offered for sale, but the writer says: "Our own folks, and our hired help, think ever so much of them, and have never ceased to express their appreciation of them. You see it is a bench on wheels and castors. It carries one or more pails, (if you please,) one for wringing, the other for rinsing.

"You will observe it has a knuckle-joint press arrangement that parts and closes the rollers. There is a spring that allows all thicknesses of cloth to be accommodated. On turning the crank the mop wrings out on the same side where it is put in. As a mop is always a short cloth, it is not tiresome to wring it, and there is no farther need of scalding your hands, or 'touching one's fingers to the dirty mop.' *An evenly-made mop* should always be used. When the machine is not required for mop-wringing, *incidental* to its design, it may serve as a water-pail bench, or as a truck to convey heavy things across a room, or to wring cloths."

The writer further says that none of these machines have been put in the market, but if they should be, they would be built of different styles and of comely appearance, and that they could be furnished at about the same price as clothes wringers of the same size rollers.

This wringer is undoubted a great convenience, and I do not wonder that it is highly appreciated by the workers who do the mopping at Oneida Community. But I think wringers like this will not soon be in great demand. They can not be made cheap enough to come within the reach of those who desire them—cultivated women who do their own house-work. Women who love to read, and who value leisure as opportunity for the exercise of æsthetic, social, or intellectual tastes, welcome every thing that enables them to do their manual labor quickly and easily. A large proportion of the women of this class cannot afford to pay much for a mop-wringer. The clothes-wringer saves time and strength, and saves the wear and tear of the clothes which result from ordinary hand-wringing. The mop-wringer saves little besides the delicacy of the hands, which we cannot afford to pay much for, and which we can hardly save any how in our various daily labors as house-keepers. Much as we dislike to put our hands into dirty water, it can hardly be shirked in our daily battle with the powers of this world. People who can afford to buy all sorts of useful implements will hardly take the trouble to supply their hired servants with a mop-wringer, since they are not anxious to save either mops or servant's hands, and nearly all of their rooms are carpeted. The average hired girl does not appreciate many labor-saving contrivances which her mistress values highly. I have had more than one washer-woman at my tubs who thought a clothes-wringer more plague than profit, while I should think the labor of washing nearly doubled if obliged to wring the clothes by hand.

I may be mistaken, but it has long seemed to me that we house-keepers should never find much amelioration of our lot, (indeed it is so with all hand-laborers)—such amelioration as we could and ought to get from the application of machinery, and the great forces of water, steam, wind, electricity, and what not—until the spirit of co-operation enables us to "stop the leaks" which seem inevitable to our present single-handed struggles for existence. Many of the advantages which will result from co-operation fall to the lot of the existing communities, but desirable as these advantages are, they are heavily over-balanced (in my opinion) by disadvantages of another kind.

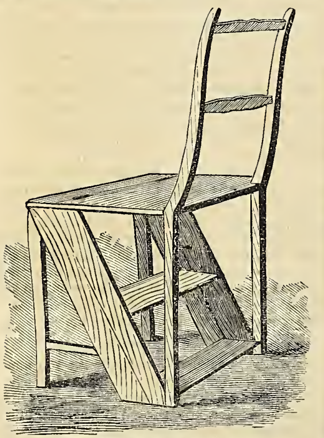
Fig. 1.—steps as a chair.

To return to the subject of mop-wringers—I saw one several years ago which was much praised by its owner—a spiral wire arrangement, screwing inside a pail, price 75 cents. I had a chance to try it and did so, but for some reason I could not make it wring my mop—perhaps it was not made right.

Women in Trousers.

The photograph to illustrate the mop-wringer, gives also a picture of a woman holding the mop in the machine. This photograph passed through editorial hands in coming to me, and called forth comments like these: "At all events, I am not responsible for what Mr. R. may think, say, or do, when he finds you in receipt of photographs of beings in br—trou—pant—or some other kind of loony things, that were formerly considered as distinctive of the male 'sect.' Oh, isn't (he—she) *it* a beauty! It almost makes me want to be a communite, and be where such can be seen every day!"

This kind of wit is too cheap for our friend, the editor, who is opposed to everything like feminine extravagance, and in favor of everything based on common sense. How would he have a woman dress when mopping her floor? The woman in the photograph wears a dress of some plain, inexpensive worsted material, made with Garabaldi, or blouse waist, coat sleeves, and plain skirt pleated at the waist, and reaching but a little below the knee. The lower limbs are modestly clothed in lined trousers, made of the same fabric as the dress, apparently fashioned, like the trousers usually "distinctive of the male sect." I do not know of any costume more suitable for a woman when mopping floors—or hoeing potatoes either. On many a dewy morning this summer, have I seen my German neighbor hoeing potatoes in the field near me, with her calico skirt, made of the usual "womanly" length, draggled almost to her knees, weighed down with dew and dirt. One might suppose that it would be for her convenience, and comfort, and health, to wear short skirts and trousers, but I am not sure that it would, it is so hard for most women to brave an adverse public opinion. It is foolish to scold about public opinion. If it is wrong, all you can do is to labor to educate it. It is not at all strange that we are shocked at the sight of a woman in trousers, all our ideas of women and angels have been, through long ages, so inseparably associated with long and flowing robes—though woman's robes do not "flow" much nowadays, except when they draggle a trail behind, in a manner that would shock all our ideas of decency and cleanliness, if we were not accustomed to it.

I am here reminded of a late idyl, by Coventry Patmore, in the "Pall Mall Gazette": "The Girl of All Periods." This line characterizes well a late fashion, and speaks of "loony things" too. "Her two shy knees bound in a single trouser." But does it not seem a cruel and absurd way to treat any two knees, shy or not? What will not women stand for fashion's sake? When we have got well past it all, (we, the human race), how very absurd it all will seem—the trails, the skeleton skirts of different shapes, the "single trouser," or pull-back, the bustles and panniers! compared with any style of dress, now quite shocking to our perverted taste, which evenly *clothes* the human body without interfering with its free exercise and development.

Until a comparatively recent period, women have not been clothed, but only draped—pinched and distorted above the waist-line, and draped below. It is useless to hoot at women in trousers, for all properly dressed women now wear trousers, as extremely few did half a century ago. These are usually made of white cotton cloth, and drapery is supposed to conceal them, but great numbers of well dressed women now wear, in cold weather, warm-colored woolen trousers over their under-suits and beneath their skirts. So we are gradually getting familiar with the idea of trousers on women, so shocking to all the old ideas of womanliness, and by and by, perhaps, we shall see that long skirts over the trousers, for the sake of woman's conventional drapery, are a luxury we can no longer afford—if not a nuisance we will no longer endure. Then if we must have drapery in motion in order to gratify our ideas of beauty, perhaps we shall put trailing drapery upon our horses—why not? Or is it possible that our ideas of beauty will undergo a reformation?

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Step-Ladders in the House.—Mrs. J. W. Perhaps you have in mind what is called a "Library Step-Ladder," which you will find figured in the *American Agriculturist*, for March, 1870. You are quite right as to the necessity for something of the kind that can be kept ready at hand. If a window-shade needs to be adjusted, a picture to be hung, or some similar trifle, one must either get the large steps from the shed, or make use of a chair or a table, or both, to reach the desired place. It is a bad practice to use furniture for this purpose; it brings a heavy strain on parts not intended to bear it, and there is danger of breaking as well as of defacing it. Besides, if children and help see the mother use furniture and—what is worse—books for purposes for which they are not intended, the example will be sure to find imitators. The Library Steps referred to, are kept in furnishing stores, and any amateur carpenter can make something that will answer the purpose. Sometimes a combination of a chair and steps is sold; this is shown in figure 1, shut, and in figure 2, open, to use as steps. When closed, this makes a good chair for the front entry or hall, and may be kept there or in some other place where it may be got at without trouble.

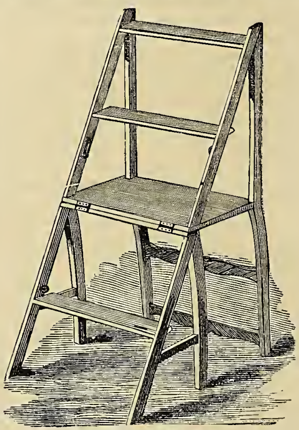
Fig. 2.—steps in use.

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Tomatoes, and How to Use Them.

Nothing more astonishes English travelers in this country, than our profusion of vegetables and their cheapness, and when they see tomatoes hawked about the streets by wagon loads, they find a wonderful contrast between the great abundance of these here, and their scarcity at home. More than that, our summers ripen the tomato to a perfection which they can not equal, even under glass. The manner in which the tomato is treated in the English culinary works, would amuse an American housekeeper. One of the best works on eatables and cookery, that we know of, is English, and entitled "Wholesome Fare," wherein we read of the tomato: "It is not common enough in England to be used on a large scale for soups and sauces, but makes a handsome side-dish to accompany various meats, by being boiled whole for about five minutes in any good stock or gravy, and served in it without losing its original form."

In whatever way tomatoes are used, they should be *thoroughly ripe*, otherwise they have the unpleasant odor and flavor belonging to green tomatoes, and which is especially strong in the plant itself. Tomatoes will ripen up after picking, and it is well to spread out and expose to the sun any that are not fully ripe—as is often the case late in the season.

Raw Tomatoes.

All who eat raw tomatoes, (and few do not), should raise their own, as they can then have them perfectly matured upon the plant. When so ripened, the skin will peel off readily, and without any scalding, a process which should be avoided for those to be eaten raw. The usual way is to serve sliced, and let each season to the taste, as the manner of dressing varies so greatly. Some use salt, pepper, and vinegar; others salt, vinegar, and oil; sometimes a regular salad dressing is made; to some they are only acceptable when eaten with sugar and vinegar, and we have seen persons treat them, like peaches, with sugar and cream. At the recommendation of a friend, who knows what is good, we have tried this way: Peel the tomato, cut it cross-wise in halves, placing the cut surface up; if very solid, gash the central portions with the knife, and put on salt, oil, and "Harvey Sauce," (an English sauce somewhat like Worcester, but milder), and in eating, cut the halves down in solid "junks" instead of slices. Good bread and butter, and a perfect Trophy tomato thus treated, make a breakfast to be thankful for.

Stewed Tomatoes.

One who travels much, finds that the name "stewed tomatoes," covers a great variety of compounds; the average country hotel serves under this name a horrid paste, thickened with flour and sweet with sugar, and we can not blame those who say they do not like tomatoes, if this is their standard. Tastes differ, but to our individual notion, sugar and tomatoes are incompatible. Tomatoes stewed until they are just fairly done, and seasoned with salt, pepper, and butter, (a plenty of that), form a dish quite unlike in flavor to the same treated to a long cooking, in which the pieces are stewed to a pulp, and the juice evaporated sufficiently to make a thick sauce, and seasoned as before. These two methods make a pleasing variety on the writer's table. Many thicken stewed tomatoes with cracker-meal or bread-crumbs, either being preferable to flour, which forms a repulsive paste. Besides the above two variations in stewed tomatoes, the only other we make is to season them with onions. Onion, used judiciously, so blends with and qualifies the flavor of the tomato, that those who approve of onions at all, will find this to be just one of the places where they are acceptable. The onion should be chopped fine, a tablespoonful or so being enough for an ordinary dishful of tomatoes. Especially to accompany roast beef, tomatoes thus cooked are—as Lowell defined poetry to be—"a touch beyond."

Scallopped Tomatoes.

are commended to those who like their tomatoes thickened. The fruit being peeled and sliced, is laid in a pudding dish, with alternate layers of cracker or bread-crumbs, distributing salt, pepper, and bits of butter on each layer, and finish with crumbs. Bake half an hour, and serve in the same dish. If the tomatoes are very juicy, bake with the dish open; otherwise cover, and when nearly done, remove the cover and brown the top.

Baked Stuffed Tomatoes.

Good-sized fruit of regular shape is required. Cut a slice from the blossom end, and scoop out the pulp; take cracker or bread-crumbs, salt, pepper, a little thyme, and butter, mix well together, and fill the cavities in the tomato, rounding it up well, set in a dish and bake for about three-quarters of an hour. Some replace the top piece or stem end, but we prefer to leave it off, and allow as much juice as possible to evaporate. *Another way.* Cut a conical plug from the seed end of a tomato, cutting down half through the fruit, or more, mix dry crumbs with seasoning and butter, as above; form cones or plugs to replace those cut from the tomatoes, and bake as before.

Broiled Tomatoes.

Good-sized, solid tomatoes are cut in halves cross-wise, placed on a gridiron or broiler, and put over a brisk fire, cut surface down. In 8 or 10 minutes, according to size, turn, put upon each half salt, pepper, and a lump of butter, and cook with the skin-side down, rather more slowly than before, about as long, or until done. An excellent breakfast dish.... The above recipes are all proved and approved; the following, untried by the writer, are from excellent sources.

Tomato Omelette.

For an omelette of six eggs, use four medium-sized tomatoes, or fewer if large; peel, cut out all hard and partly ripe parts, and chop fine. Rub two tablespoonfuls of flour into a tablespoonful of butter, mix with the tomatoes, and add salt, with pepper, if desired, stir the beaten eggs into those, and cook as for other omelettes. Unless the tomatoes are thoroughly ripe, cook them slightly first.

Tomato Hash.

Butter a dish, put in a layer of peeled and sliced tomatoes, a layer of cold meat in thin slices, and a layer of bread and butter, and so on until the dish is full; add seasoning to the layers. Pour beaten eggs over the top, and bake brown.—*Home Cook Book.*

Tomato Toast.

Stew tomatoes until done, seasoning with butter and salt, add milk to make sufficiently thin, or cream, when the butter may be omitted, and use this upon slices of well toasted bread, instead of the usual sauce made for dip or cream toast. Said to be a fine breakfast dish.

Corn and Tomatoes.

Equal quantities of peeled and sliced tomatoes, and green corn cut from the cob; stew together for half an hour. Season with pepper, salt, and a *very* little sugar. Stew 15 minutes longer, and stir in a great lump of butter. Five minutes later pour out and serve.—*Common Sense in the Household.*

We have omitted the various uses in soups, sauces, catsup, etc., for want of space.

Canned, or Preserved Tomatoes.

If any housekeeper has been successful in putting up tomatoes in glass jars or bottles, will she please give her process?

Burns and Scalds.

The Household Department has very little to say about medical matters. We notice that some journals have what they call a "Hygienic" column or department, in which are presented numerous recipes for the cure of all sorts of diseases, which form an accumulation of most absurd and unmitigated rubbish. It is in human nature to use remedies for, instead of trying to avoid disease, and convinced that promiscuous dosing does much more harm than good, we have declined to publish the many "sure cures" and "best things in the world," that have been sent us. Still, however we may object to much dosing, every mother should know what to do for slight attacks of illness, and have at hand a few simple remedies to use in sudden emergencies; and what is of still more consequence, she should know how far she can trust to her own knowledge in a case of illness, and when it is necessary to call in greater skill than her own.

Among the accidents which call for prompt treatment, none are more frequent in the family than burns and scalds, and each mother has her favorite application, which, so far as it tends to exclude the air from the wounded surface without irritating it, is useful. Doct. G. F. Waters, of Salem, Mass., has recently discovered a most effective remedy for burns and scalds, which is so simple, and always at hand, that we give it for the benefit of our readers. It is merely to sprinkle the injured surface with the Bicarbonate of Soda—the common baking soda—and cover it with a wet cloth. When the burn is only superficial, the pain is said to cease instantly, and but one application needed; where the injury extends deeper, longer time and more applications will be required. To show the efficiency of this remedy, Dr. W., at a meeting of the Mass. Dental Society, made an illustration in his own person; in presence of the meeting he scalded his wrist with boiling water, in one place making a deep scald, by applying boiling water with a sponge for 30 seconds. The pain at once ceased on the application of soda, covered with a wet cloth, and the next day, all but the part intentionally burned more severely than the rest, was practically healed, and that portion was healing rapidly.

BOYS & GIRLS' COLUMNS.

Cute but Naughty—were some boys in England. The Bullfinch, a common bird in that country, is often kept in cages, as it is very easily tamed; it has a sweet and pleasing song of its own, and besides this, may be taught to whistle tunes. For these reasons the birds can be readily sold. The boys knew that if they could catch bullfinches they would bring them pennies, but as sparrows were more plentiful and easier taken, they caught sparrows. While the two birds—sparrow and bullfinch, are much of the same size, their plumage is quite different, so the young rascals went to work, and with black for the head, wings, and tail, and some red for the breast and belly, the painted sparrow looked so much like a bullfinch that, if it would only stop its chatter long enough, it might be easily passed off for one. The boys sold their painted sparrows, and getting for them the prices of bullfinches, they got money—but they also got something else—an introduction to the magistrate, and a chance to go for a while where bad boys, rather than sparrows, were caged.——We have seen something like this in New York. Several years ago a man was on the streets with a pair of bright crimson fan-tail pigeons, which he offered for sale. It must be a very dull person who could not see at a glance, that these were white pigeons with their feathers stained with red ink, or some other crimson liquid, and were a barefaced cheat.

A VIEW OF THE PHIZ-PHIZ FALLS, SHOWING SOME REMARKABLE FEATURES IN THE SCENERY.

Aunt Sue's Chats.

Lillie F.—To make a simple and pretty "Scratch My Back" (for matches), take a piece of perforated cardboard; about 80 holes one way, and 65 the other. Work it with red, blue, or any colored worsted you choose, like figure 1. Figure 2 will show you how many holes to take in working the marginal squares. You can get patterns for the letters at almost any worsted store. When you have finished the squares and the letters, cut the cardboard around the outer points of the squares in the next row of holes to those worked with the worsted. Now lay this cardboard on the wrong side of a sheet of emery paper (or fine sand-paper), and mark it around the points with a lead pencil. Cut the paper in the penciled line, all around. Fasten the paper on to the cardboard with the same colored worsted with which you worked it, by one long stitch on the paper side, from point to crotch, and a small stitch on the cardboard side, all around the edges. Figure 3 will show, by the white lines, how to put the stitches on the back. Fasten little worsted tassels to the points, as in figure 1, and attach a twisted worsted cord (with tasseled ends) by which to hang it.

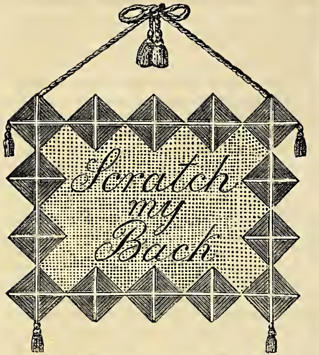

Fig. 1.—SCRATCH MY BACK, COMPLETE.

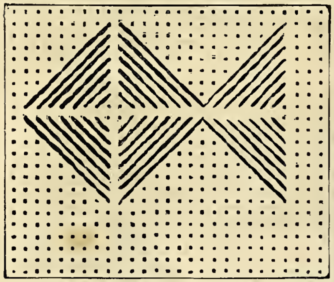

Fig. 2.—THE WAY OF WORKING.

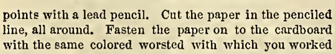

Fig. 3.—HOW TO MAKE THE STITCHES.

Alva M. S.—No, "Prussian blue" does not necessarily "come from Prussia." Chemically speaking, it is a compound of two cyanides of iron, and its composition is altogether too complex to be understood, except by those who have made considerable progress in chemistry.

C. S. Campbell—in answer to my question concerning his relationship to E. D. Campbell—says, "I will say, as Senator Cameron did, upon being asked if he was related to another gentleman of that name—'That in all probability their forefathers stole cattle together on the Scottish highlands, but he was not aware of any nearer relationship.'"

June 1st, 1877.

Dear Aunt Sue:—I wonder if any of the *American Agriculturist* girls have tried to ornament ginger-jars, I have, and have succeeded so well, that I want to tell the rest how to do it. It is a very cheap, as well as beautiful way of decorating, and they are almost as handsome as the Japanese and Chinese wares that are so much sold now. Take an old ginger-jar; get some of the French pictures that are sold everywhere (you will want three or four large ones for center-pieces and small ones to put around them); flowers, butterflies, and birds, are the prettiest, (place the butterflies and birds as if about to alight on the flowers), or if you wish to have your jar Japanese or Chinese, get Japanese or Chinese figures and animals. Then gild a rim around the top and bottom of the jar with the gilt-paint, which can be procured at the Japanese stores; do it with a small camel's-hair-brush, and make little dots of gilt all around between the pictures with the end of your brush; do not have them too even, or they will look stiff. Some people paste gilt-paper around, in place of the paint, but gilt-paint is much prettier and wears better. Now varnish your jar with the best of coach-varnish, right over the pictures and gilt, and set it away to dry, and it is done. If you choose, you can paint your jar black before ornamenting, some think them much handsomer so. I have made a very pretty card-receiver by painting black a common breakfast-plate with little raised figures on it, and gilding the figures, a rim around the edge, and a circle in the middle; then pasting on little pictures between the gilt figures, and varnishing it. Always use dissolved Gum-Arabic for glue, as it does not stain the pictures. The tall brown earthen jars, that almost everybody has, are very pretty ornamented in the same way for scrap-jars. You cannot imagine how pretty they all are, until you have seen them, and I presume some of you will like to try it. It is not difficult work for any one who is neat and patient.

Fannie L. Clark,
North Branford, Conn.

Fannie L. Clark sends a letter, for which we are much obliged, giving instructions for decorating jars, etc. I know they are quite effective and pretty, and I have no doubt but what many of my nieces will at once try the experiment. Suitable pictures can be procured at the stationers, and if you have no Japanese stores in the neighborhood, you can perhaps get the gilt paint at the paint-stores.

Margaret T.—"Clara Josephine" was delighted with the pretty feathers, and says "ta-ta" for them.

A Little Correction.—"C. H.," Elizabeth, N. J., calls attention to the fact, that in the May "Chats" the word "Carnival" is said to be from "*carno*, meaning flesh." This is a mistake of the types; it should have been from *caro*, meaning flesh, that word being declined *caro*, *carnis*, *carni*, etc. Thanks to "C. H.," who pointed it out in time, but the direction on his letter being 245 Broadway, it did not go direct to Box 111, Brooklyn, for a long time.

The Doctor's Correspondence.

The letter budget for this month is very small, and I do not at all wonder at it. I think it vastly better that the boys and girls should be enjoying themselves in the open air in these summer days, or in the warm evenings to be watching the fire-flies, and listening to the music from various insects that fills the air, and enjoying the pleasant company of family and friends, than to be in-doors poring over books, or writing. There is a time for all things, and with cooler evenings, I have no doubt that numbers of my boys and girls will have a plenty to tell me of what they have done and seen, and no end of questions to ask as to things that they wish to know more about. Mind, I don't say that you are not to write in warm weather, only I don't blame you, if you prefer to do something else.

DO CATERPILLARS STING?

This question is asked almost every summer, and now "W. G. C.," of New Jersey, sends me specimens of the caterpillar "which stung him." He was picking a piece of "Wild Indigo," a rather common plant, when his hand suddenly felt as if touched by fire; upon examination, he found three greenish caterpillars upon the branch, and naturally came to the conclusion that they were the cause of the hurt. He was right—they were, and yet they did not *sting* him, in any proper sense of the word, or in anything like the manner in which a wasp or bee would sting. The proper sting of an animal or plant (such as nettles) is a sharp pointed hollow tube, at the bottom of which is a little bag containing a liquid, which, when the least drop of it passes into the flesh, causes a poisoning of the parts, with great pain and swelling. A prick with a needle will cause pain, but this is not a sting, so the sharp down of some plants, which consists of very minute hairs with barbs on them, will easily enter the skin and cause intense burning and itching, but these are not true stings. Many suppose that the

GREAT GREEN TOMATO WORM,

because it has a horn on its tail-end, must sting, and are afraid to remove it from their vines for fear of being hurt. This creature, though not handsome, is harmless, and can neither sting nor bite. There are very few caterpillars, and these not common ones, that have jaws strong enough to give even a painful pinch, and these few are in no manner poisonous. But to return to the case of our New Jersey friend: his caterpillar, shown in figure 1, is the larval state of a very pretty moth known as the Io moth. One of the early entomologists gave this insect the fanciful name of *Saturnia Io*, Saturnia being one of the names of the goddess Juno, and Io was one of her priestesses. I believe that the students of insects have other names for this at present, but Io moth is a very good common name. The male of this moth, which is shown in figure 2, is of a deep yellow color, with purplish brown markings on the fore-wings, and on each hind-wing, a large blue spot, with a black border and a dash of white in the center. The female is somewhat larger, and different in color, the wings being generally purplish brown, with gray markings, but it has similar spots on the hind-wings. The caterpillars are hatched about the end of June, and are found on a great variety of plants, including corn and cotton, and the willows, poplars, and wild cherries, among trees. The caterpillars are of a beautiful pea-green color, and have on each side a brown stripe, edged on the lower side with white. On each ring of the body are several elevations, and these bear clusters of about 30 stiff hairs, which are green and more or less brownish or blackish at the tip. It is, on the whole, a very pretty caterpillar,

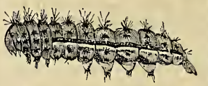

Fig. 1.—IO CATERPILLAR.

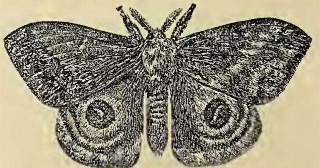

Fig. 2.—IO MOTH.

BUT DON'T HANDLE IT,

as these hairs, or spines, are very sharp and brittle, and enter the skin at the least touch, making their presence known in the most positive manner. These are all the "stings" that any caterpillar has, and there are several others that are capable of wounding in a similar manner. Mr. Riley, the celebrated entomologist of Missouri, says, that he knows of 15 different caterpillars with hairs of this kind. Of course, all hairy caterpillars do not wound, but in handling those that you do not know, it is well to be cautious, for, though no serious trouble follows their pricking, it is far from pleasant for a short time....Here is another letter about insects, this time from Connecticut, and

ABOUT A WASP AND A CATERPILLAR.

A little wasp was seen dragging a large cabbage caterpillar, and the writer wishes to know what it was doing this for, as the same thing has recently been noticed several times before. The box in which the insects were sent fared badly in the mail, and as I could only find the fragments of the wasp, I can not tell which one it is. The wood-boring wasps, the mud-daubers, and others, have a curious way of providing food for their young. Wasps, like bees, raise their young in cells, though not waxen ones. A cell is bored in an old stump, or is built up of mud, or other material, and an egg laid in the cell, which is then closed up; the egg hatches, and the grub or larva makes its growth within the cell, undergoes its changes there, and at length comes out as a perfect wasp. But to do all this, the young grub of a wasp must have food, and instead of providing it, as the bees do their young, with bee-bread, a delicate vegetable food, which is the pollen of flowers, the young wasp is supplied with

A STORE OF FRESH MEAT,

which is laid in the cell for its use. Caterpillars, spiders, house-flies, and other insects, are put away in the cell with the egg. If these were lively, they would be troublesome to get into the cell, and after they were there, and if they were dead, they would spoil before the grub wasp was hatched and ready to eat; so the old wasp stings the caterpillar or other insect in such a manner and just enough as to keep it quiet, but not so as to kill it, and in this stupified condition it is stored away in the cell. Wasps have been known to sting and carry off grasshoppers and other insects much larger than themselves. It is supposed that the poison of the wasp preserves from decay the caterpillars, etc., provided for food. At all events, it is a very curious way of feeding baby-wasps. ....The next letter is not about insects, but contains a plant from Master George B. G., who lives in New Hampshire. George wishes me "to name the plant if there is a name for it." It would be a very wonderful thing if he, or any other of my young friends, who live in the older parts of the country, should find a plant that had never been named. I do not say that this is impossible, but it is nearly as unlikely as the finding of a diamond. This plant is a very old one, and is not a native of this country, but a wanderer from Europe.

ITS COMMON NAME IS "MUGWORT";

its botanical name is *Artemisia vulgaris.* It was named *Artemisia* in honor of *Artemis*, a goddess of the ancient Greeks, who was the same as the Roman *Diana.* As there are several Artemisias, this was named *vulgaris*, meaning common, it probably being the most abundant in Europe. The Wormwood is another *Artemisia*, the "Southern Wood," or "Old-man," or "Boy's Love," another, both found more or less in old gardens, while the common shrub on the western plains, called "Sage-bush," from its color, is still another and a native *Artemisia.* Before beer or ale were used in England, the people made various bitter drinks, and this was called Mugwort, because it was used to flavor the contents of the mugs out of which our forefathers' forefathers drank. In olden times, when people used to dose much more than they do now, almost every plant that had a strong smell or a disagreeable taste, was supposed to be good for some disease, and this, with many others, was cultivated in gardens. This was probably first brought to the country as a garden plant, and it is now found here and there, scattered along road-sides and in such places, but not very abundant.... Master Norton, of New Jersey, wishes me to tell him

THE NAME OF A TOAD OR A FROG,

which he found in the woods. If my young friend had sent a drawing—and every boy and girl should learn to draw—or even a full description, I might have made a pretty near guess, but all the description he gives is: "It was a dull lead-color, just about the color of the dead leaves in the woods, and could hardly be told from them."—From this I *guess* Tree-frog, or as it is generally called, Tree-toad, a little animal that is quite common in all the Northern and Middle States. This is able to change its color to a remarkable extent, and it is for this reason that it is so seldom seen, as it becomes so near the color of the bark or dead leaves, that even a sharp-eyed boy would pass without noticing it. But it makes up in being heard, and almost anywhere its voice goes far to help make up the general hum, so noticeable in the country on summer nights. It is particularly noisy before a rain. I can tell master Norton and all the rest, how to surely know the *Hyla*, or Tree-frog, as that has the end of each of its fingers and toes spread out as a round flat disk, as in figure 3; this is quite sticky, and helps the animal to cling to smooth surfaces. The toes have a web extending between them for more than three-fourths of their length. In the southernmost States, another species is found in place of ours, and differs from it in being of a bright green. This is the Tree-frog shown in the engraving, which is given here to show the feet and toes, those of the more northern species being like these..... One inquiring boy wishes me to describe the

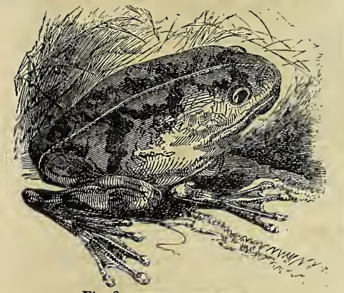
Fig. 3.—GREEN TREE-FROG.

METRICAL SYSTEM OF WEIGHTS AND MEASURES,

and I am glad to see an interest felt in this, for it is something that every boy and girl should know about, as the time will come when it will be in general use in this country. It is perhaps a rather dry subject to tell all about at once, and I will give a part at a time, but first I think it will be well to say something about the weights and measures we have in use. All savage people, if they have measures and weights at all, take them from some natural objects, and in less advanced oriental countries, seeds are still used for weights. Some tribes use a tortoise-shell for a measure, and even in civilized countries women measure by fingers. Many years ago I bought some wagon-loads of corn from the Pimo Indians, a farming tribe in what is now Arizona. The corn was brought in small lots, and paid for in cotton cloth. It was agreed that I would give a *vara* of cloth for a certain basketful of corn. A *vara* is the Mexican yard, and shorter than our yard by about three inches. But we could not go on with our trade until we had agreed on what the *vara* should be—inches they knew nothing about; their idea of the measure was, that it was the distance from a man's nose to the ends of his fingers, when the arm was stretched out as far as possible. My nose and fingers would not suit, and it was only after getting the longest-armed Indian of the tribe to stretch his very utmost, that we fixed upon a *vara* that would suit, and when this was marked upon a stick to the satisfaction of all the head men, who all talked their jabber at once, that business went on smoothly. You may think this a droll way of fixing upon a measure, but when we use a rule or a yard-stick, we measure with something that had quite as rude a start. You read in your tables that

"THREE BARLEY-CORNS MAKE AN INCH,"

perhaps without thinking that the measures of length we now use, are established upon three grains of barley —or barley-corns. Then in the table of weights, we find a similar starting point: 24 grains make a penny-weight, and 20 penny-weights make an ounce. The weight of the coin was first fixed, and the coin served for the starting point of the larger weights. In England, in the reign of Henry III. (1266), a law was enacted that the penny "shall weigh 32 grains of wheat well dried, and out of the middle of the ear."* Later this was altered to 24 grains for the weight of the penny. From the penny, ounces and pounds were derived; then from pounds came both liquid and dry measure; eight pounds were a gallon of wine, and eight gallons of wine, a bushel. This, with 24 grains to the pennyweight, 20 pennyweights to the ounce, and 12 ounces to the pound, was originally the only kind of weight used in England, but is now used almost solely for the precious metals, and called Troy weight; what is known as Apothecaries weight, has the same pound, ounce, and grain, but the ounce is divided into scruples and drams. It was many years afterwards that the Normans brought the Avoirdupois weight into England, where its use was by law confined to certain articles, including butcher's meat, but it finally became the general weight used in nearly all trading. The pound Avoirdupois is 7,000 grains, while the pound Troy is 5,760 grains. There being different weights in use, and no means of finding out if any were correct, the British Government in 1824 had a standard pound, and a standard yard made, with which all others must agree, and these were to be in the care of the Clerk of the House of Commons. But the Houses of Parliament were burned in 1834, and away went Britannia's yard-stick and weights, and there was the greatest possible trouble in fixing upon new ones. As in all such matters, our customs came from England, we had, originally, and still continue to use these old weights and measures, which started with barley-corns and wheat grains. There is nothing to be said in their favor, except that we are used to them, and no objection to a much better system, other than that

IT IS TOO MUCH TROUBLE TO LEARN IT.

The greatest objection to our present system is, that there is no true standard by which we can test them, and if the particular weight and measure which the Government procured from England, to serve as the standards from which all others must be copied, and with which all others must agree, should get destroyed, there is no very certain way of renewing them. This short talk about our present weights and measures, will show you some of the reasons why we should have a better system, and it is agreed by all who have thoroughly studied it, that what is known as the Metrical System, is vastly better than any other. I will try at another time to tell you something about this Metrical System.

◆

Aunt Sue's Puzzle-Box.

COMPOUND CROSS WORD.

My first is in figure but not in sum,
My next is in finger but not in thumb,
My third is in George but not in Bill,
My fourth is in garden but not in hill,
My fifth is in eager but not in rash,
My sixth is in girdle but not in sash,
My seventh is in paint but not in dye,
My eighth is in cunning but not in sly,
My ninth is in cake but not in pie.
Now, if these letters you will duly place,
A girl's name and a boy's name you may trace.

NIP.

DIAMOND PUZZLE.

1. Part of Spain. 2. An age. 3. Strong. 4. A European country. 5. A bird. 6. A cover. 7. Part of France.

The central letters, horizontal and perpendicular, name a country. ITALIAN BOY.

DECAPITATIONS.

1. Behead-to rebuke, and leave-to conceal.
2. Behead to draggle and leave a piece of timber.
3. Behead to leap forth and leave to unite.
4. Behead a vision and leave to stretch out.
5. Behead a kind of sand and leave a musical instrument.
6. Behead to long for and leave to merit.
7. Behead immense and leave a model.

GEORGE H. FULLER.

BIBLICAL ENIGMA.

I am composed of 24 letters:

My 3, 16, 23, 9, 17, was a province of Arabia.
My 10, 4, 19, 13, 22, was a city of Bashan.
My 11, 17, 21, 5, 19, was a mountain of Palestine.
My 12, 7, 15, 20, 8, was a companion of Paul.
My 16, 2, 14, 17, 6, was a king of Tyre.
My 18, 17, 16, 20, 6, was a Jewish prophet.
My 24, 11, 14, 17, 1, was used by the children of Israel in making brick.

My whole is a biblical maxim. ISOLA.

PUZZLE.

Take half of a bird, two-thirds of a cat, three-quarters of a lion, half of a bear, and a quarter of a yard, and make a book. BELLE.

ALPHABETICAL ARITHMETIC.

```
G A Y ) O E F L L ( L L O
        O G L
        -----
          O R L
          O G L
          -----
            E S L
            W Y E
            -----
              O W
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ANNIE FARMER.

CONCEALED SQUARE WORD.

1. That Bass's ale makes him sick, and no wonder.
2. Did Emma bid Edward good-bye?
3. After a counsel, I mitigated his punishment.
4. He led, I led, and we both led the party at different times.
5. We met Erastus on the avenue driving a sorrel horse.

BILLY BUTTON.

CONCEALED PROVERB.

That is a long time ago, O! Dan. Villains do especially congregate in that den: I saw a knot of them come to grief early this morning. Their respectable appearance is all a sham,—mere humbug. T. E. D.

PI.

A toneforapi-krame yass hatt, fo lal durtufaceman nights, soapin brea het stobleu tharcrace, inces heyt rea clifdesasi sa hegin drang, ripthug, dan qnears.

METAGRAM.

Select a word of four letters in which may be found (inclusive) four verbs, four substantives, three adverbs, one preposition, and one exclamation.

DOUBLE ACROSTIC.

The initials and finals form the name of a favorite authoress.—1. A girl's name. 2. A Hebrew proper name. 3. A Saxon proper name. 4. A Spanish proper name. 5. The name of a Scottish novelist. 6. A precious stone.

BEATRICE.

SYNCOPATIONS.

1. Syncopate very swift, and leave a hostile incursion.
2. Syncopate a gum, and leave part of a harness.
3. Syncopate a black-man, and leave a cruel tyrant.
4. Syncopate to surround, and leave a vegetable.
5. Syncopate a useful article in the kitchen, and leave ire.
6. Syncopate something laughable, and leave the front.

ITALIAN BOY.

ANAGRAMS.

1. See tin harps.
2. Song verse.
3. Arouse gout.
4. Rent tubes.
5. O! redeem bird.
6. In clam pots.
7. Beach trial.
8. Cure habe.
9. Absurd tales.
10. 'Tis odd lace.

EMILY.

ENIGMATICAL BOUQUET.

1. A source of great vexation to a lone man. 2. A perennial and a wine. 3. A metal cane or stick. 4. A boy's name and something connected with most birds. 5. A sugared letter. 6. A rich man made of baked clay. 7. The fountain of contentment. 8. The head-covering of a certain man. 9. Two things often seen on the breakfast-table.

BLANK REVERSALS.

(Fill the second blank in each sentence with the word which fills the first blank, reversed. *Example*—He heard *raps* upon the *spar.*)

1. Would you not —— to see —— if he were living?
2. During the —— we could only get —— food.
3. We occupied a large —— on the ——.
4. She —— there, for I —— her.
5. The —— fell into the bucket of ——.

◆

ANSWERS TO PUZZLES IN THE JULY NUMBER.

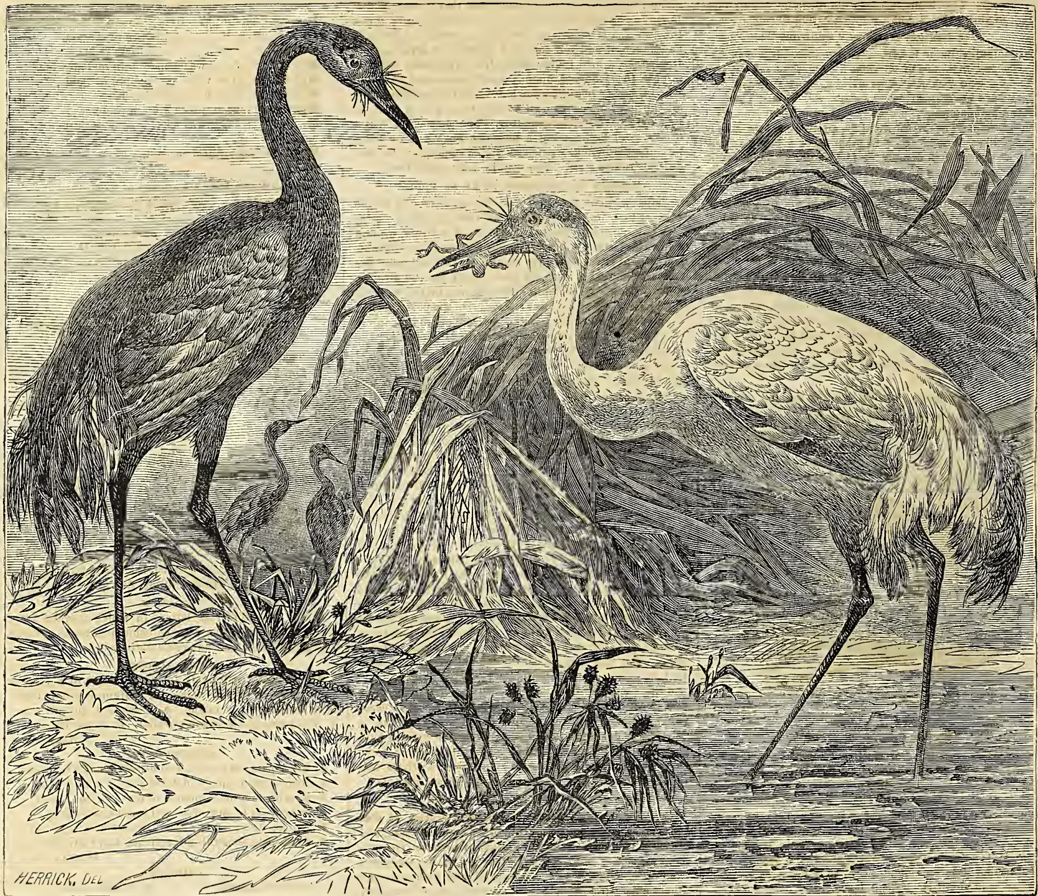
ANAGRAMS.—1. Yesterday. 2. Dignified. 3. Endeavor. 4. Solicited. 5. Destroyed. 6. Afterwards. 7. Gymnasium. 8. Physician. 9. Entertains. 10. Commissioner.

EASY ANAGRAMS.—1. Horse. 2. Ivory. 3. Table. 4. Chain. 5. Reason. 6. Contain. 7. Potatoes. 8. Through. 9. Between. 10. Reader.

NUMERICAL ENIGMA.—Where there's a will there's a way.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

☞ Correspondents will save time, if they will address their letters to me, *until the first of November* (not afterwards), to "Rowayton, Fairfield Co., Conn."



LONG-LEGGED BIRDS.—THE WHOOPING CRANE—YOUNG AND OLD.

You do not have any difficulty in telling a bird from any other animal; though birds among themselves show wonderful differences, yet you are never in doubt whether a particular specimen is a bird or not. Yet how great the difference between a humming-bird, not larger than some insects, and with a flight so rapid that you can hardly see its wings, and a domestic goose, which rarely flies, is awkward in all its movements, and large enough for a dinner for a whole family. Some birds feed only on other birds, or small quadrupeds, and such other animals as they can catch; others live on insects; still others find their food in various seeds and fruits; then when we come to the sea-shore, or the great lakes, we find birds that live upon fish, which they catch in deep water, or along shore, where the water is shallow. If birds all lived upon one thing, they would soon find a scarcity of food, and it is very interesting to observe that each class of birds is so formed that it can best get its living in one particular way. A look at a hawk, with its fierce bill and powerful claws, shows that it is intended to prey upon living creatures; if a duck, with its broad, blunt bill, and clumsy web-feet, should try to carry off a young rabbit, what poor work it would make of it! It would get along no better than would a hawk if obliged to swim and dive to the bottom of the river for its dinner. Wherever we look, whether at birds, at quadrupeds, or other animals, or even at plants, we find that each and all are especially adapted to live in a certain manner, and in particular places, and it is not possible for any thinking person, even a child, to fail to see that all this has not happened by chance. Men do not build locomotive engines to run upon the water, or construct steam-boats to travel on the land, and it is very plain that the Creator designed these different forms of birds and other creatures for a particular purpose. If a naturalist is studying birds (and it is so with other departments), he finds those which get their living in a particular manner, are constructed, or built, so to speak, on a similar plan, and he groups the birds according to this plan as shown in their structure. You would not class the duck and the hen, or the pigeon and the hawk together, and while you, perhaps, could not tell at once all their differences, you know that they are fitted in their feet, their bills, and all their parts, each for a particular mode of life. Everybody, even young people, are naturalists to some extent. Those who make a special study of birds, are called *ornithologists*, as they study ornithology—a pretty long word, but perhaps it will not seem hard or difficult to remember if you know that it means "bird-discourse," or as we may say "bird-talk"; the name, when it was found necessary to have one, was make from the Greek *ornis*, a bird, and *logos*, a discourse, and means the science of birds. Ornithologists differ as to the manner in which they group or classify birds, but they nearly all agree in having a group or order of Waders. These are birds with very long bill, neck, and legs, and a very short tail; the leg is also bare of feathers for some distance above the lower joint, and they mostly live in marshes, or on the shores near the water. These are further divided into several sub-orders, on account of minor differences, but they all agree in the leading points here named. The Waders include birds of various sizes, from the little plovers and sand-pipers, up to the bitterns, the herons, and the cranes. To show the general appearance of the Waders, and at the same time give the portrait of a rather rare bird, here is a picture of what is called the Whooping Crane, which is found in the States of the Valley of the Mississippi, in the Gulf States, and occasionally in the Middle States. It is one of the grandest of our native birds, it being between four and five feet long. Its plumage is entirely white, except some black on the wings, its legs are black, the head carmine. The two birds shown in the engraving, are not different cranes, but an old and a young one. The young does not appear in a white dress the first season, but goes about in modest gray and brown, and it has been mistaken for a different bird. The flight of this crane is very high and rapid, and as they pass far over head, their coarse note, which gives them the name of Whooping Crane, may be heard for a great distance. It is stated that when mating, the male birds have severe fights, and that their cries at this time have been heard for three miles. They feed upon small fishes, frogs and other reptiles, and upon the roots of various plants that grow in muddy places. As they pass from North to South, they are said to stop on the sweet-potato fields, to search for any potatoes that may be left in digging. Travellers on the far western prairies, where the air is so peculiar that all distant things are strangely magnified, tell numerous stories of being deceived by this bird. One teamster followed one of these cranes for several miles, thinking that it was a mule that had strayed from the camp; and an old hunter has been known to crawl a long distance on his belly to get a shot at what he took for an antelope, and he only found out his mistake when his antelope took wing and flew off as a Whooping Crane. They are exceedingly quick to catch the least sound, and if once alarmed, they keep on the alert. It is said that these birds were formerly found in New Jersey and other Eastern States, but they have been killed off or frightened away from all the thickly settled parts of the country. That any one should wish to kill such a noble bird, that is not useful for food, and does no harm to any one, seems not only thoughtless, but wicked. We do not envy the feelings of one who, for the sake of shooting something, can stop the flight of this beautiful white Crane, and see it drop a lifeless mass of useless flesh and blood-stained feathers. Audubon states that they become very tame in captivity, and he gives an account of the odd and suspicious ways of one that he had.

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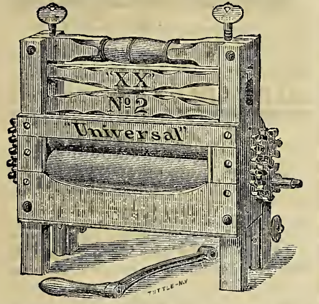

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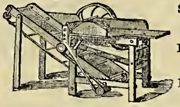

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THE BEST HORSE SHOE NAIL EVER MADE.

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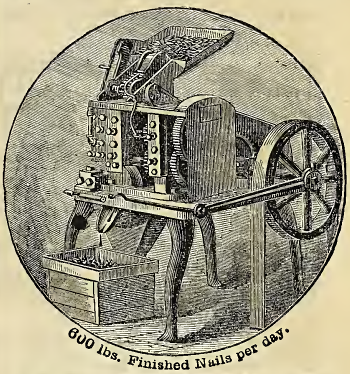

600 lbs. Finished Nails per day.

At the Centennial Exposition in Philadelphia, we were awarded the Medal and the following report, far stronger than that given upon any other Nail:

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[BUREAU OF AWARDS.]

PHILADELPHIA, June 22, 1876.

No. 239, Globe Nail Co., Boston, Mass.:

Horse Shoe Nails, Pointed, Polished and Finished. The uniformity in size, smoothness of finish, hardness and tenacity of the iron, closeness of fibre, and excellence of the head and point, the tensile strength of body, and riveting properties of these Nails, unite in making them of the very highest class of manufacture.

Recommended for an Award of Merit.

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G. L. REED, Clearfield, Pa., } Judges
DAV. McHARDY, Aberdeen, Scotland, } XV.
T. DIEFENBACH, Germany, }

We annex a sample of the testimonials we receive daily from all parts of the country:

ST. LOUIS, MO., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.

Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the Globe Nail, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals,—horses in particular,—I desire to say a few words in favor of **The Globe Nail.** Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the Globe Nail in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say **it has no superior in point of Toughness, Shape, and Finish, if it has any equal.** I have used about fifteen hundred pounds of Globe Nails a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If hosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. **I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat!** I am willing to pay, without any suit, for all horses that are lamed in my shop by using the Globe Nail. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,
(Signed.) P. H. O'NEILL,
Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary. P. H. O'N.

The best Horse is sure to win. SO CLEAR THE TRACK FOR THE

GLOBE NAIL CO.

Strawberry Plants, (Pot-grown).

If planted now will bear freely next season.

The advantage of planting pot-grown plants, will be readily admitted by all who have given it a trial.—The extra expense of the plants will be amply repaid by a good crop of fruit next season. Our stock embraces all the new and leading varieties—such as **Charles Downing, Seth Boyden, Monarch of the West, Kerr's Late Prolific, Champion, Triomphe de Gaud, Jucunda, Wilson's Albany.** $3.00 per hundred; $25.00 per thousand; $100.00 per 5,000.

Great American—One of the finest ever grown—berries were exhibited the past season measuring nine inches in circumference. Pot-grown plants, $2.50 per doz.; $7.00 per fifty; $12 per hundred. Good layers will be ready early in Sept. Circulars giving a list of all the leading varieties, with instructions for planting, sent free to all applicants.

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Strong Pot Roses, suitable for **Winter Bloom,** sent safely by mail, postpaid. *5 splendid varieties, your choice,* all labeled, for **$1; 12** for **$2; 19** for **$3; 26** for **$4; 35** for **$5.** For 10 cents each additional, one *Magnificent Premium Rose* to every dollar's worth ordered. Send for our **New Guide to Rose Culture,** and choose from over **300** finest sorts. We make Roses a **Great Specialty,** *and are the largest Rose-growers in America.* Refer to 100,000 customers in the United States and Canada. THE DINGEE & CONARD CO., ROSE-GROWERS, West Grove, Chester Co., Pa.

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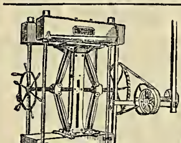

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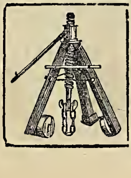

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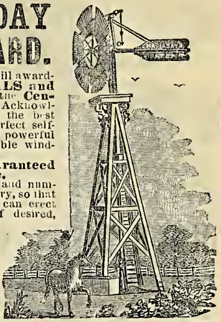

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Every Mill Guaranteed as above.
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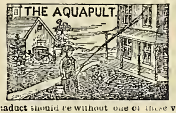
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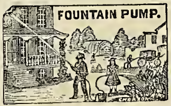
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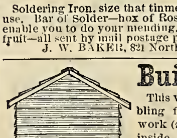

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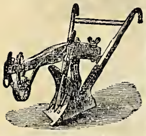
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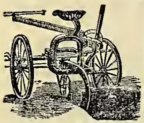

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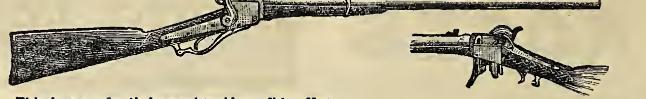

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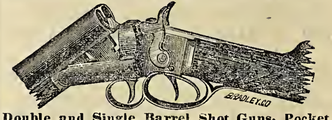

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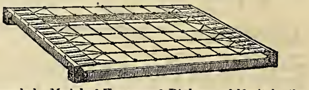

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OUR BASKET

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 329.

Sweetness From Florida.—A sample of syrup from cane, not sorghum, but the true sugar-cane, is sent by Col. Oliver, of the "Florida New Yorker." The syrup is similar in quality to the "Golden-drip," and other brands sold in the stores, and as a little over an acre yielded 14 bbls. of 40 gallons each, those who go to Florida need not be without the sweets of life. The capabilities of Florida as a sugar-producing State, have been overlooked in the excitement over orange culture, and we have long been of the opinion that the cultivation of the cane and the making of sugar, is to be one of the leading industries of the State.

"Japanese Wheat."—A correspondent in Ark. wrote to ask about the value of "Japanese wheat," the seeds of which were offered, and wonderful stories told about it. As this was one of the "novelties" that had thus far escaped us, we asked him to send us a sample. It came and turned out to be the "same old six-pence"—a variety of "Durra," or *Sorghum vulgare*, and no more a "wheat" than it is a "rice." It is a variety with brownish seeds, quite as dark in color as those of some of the syrup sorghums. We suppose there is no ready way of legally suppressing those chaps who offer seeds under false names, but all farmers, especially those who read the *American Agriculturist*, should know that valuable varieties of grain, or any other plant, do not usually make their way into cultivation through obscure dealers in small towns in Tennessee, or any other State.

Roots for Stock-Feeding, a manual on their value and cultivation, is issued by David Landreth & Sons, the well known seed-growers of Philadelphia, Pa. It treats upon the relative value, methods of cultivating, harvesting, storing, and feeding of the different varieties of turnips, beets, carrots, and parsnips. Root culture, though rapidly increasing in this country, is still in its infancy, and whatever will extend a knowledge of its importance among farmers, is welcomed as useful. The appendix on Beet Sugar, while showing its importance in other countries, and the desirability of its production here, should have set forth more distinctly the impracticability of its manufacture on a small scale, and the causes of the utter failure of all former attempts made in this country on a large scale.

A Montana Stock Farm.—A few years ago Montana would have seemed one of the most unlikely places in the world to have looked for a fine stock breeding farm, with a herd of valuable pure Short-horns. But now this thing has been accomplished. We look back at the rapid growth of the cattle interest in this far-off corner of the country with something like amazement, and wonder to find the best quality of grade cattle coming to Eastern markets from what was, half a dozen years ago, supposed to be a worthless and unapproachable desert. It is due to our railroad system, that cattle and other live stock can now be brought from the heart of the Rocky Mountains to the sea-board, with as little trouble and cost, as formerly they were brought from Western New York or Ohio. It is now, we believe, a fact, stated on good authority, that Montana, in proportion to population, owns more pure-bred Short-horns, than any other State or Territory, Kentucky alone excepted.

The Woodruff Scientific Expedition Around the World.—This is to be, in short, a floating college. A ship with a complete outfit in materials, and a full faculty of instruction, will start in Oct. next, circumnavigate the globe, and return in 1879. For pamphlets, giving terms, etc., apply to the Corresponding Secretary, Daniel Macauley, Indianapolis, Ind.

Black-Faced Scotch Sheep.—This hardy race of sheep has a well deserved character for prolificness. A flock of 260 cross-bred black-faces, in Scotland, produced on the average the present season more than two lambs to the ewe. A few years ago a flock of 60 ewes of this breed reared 121 lambs. Notwithstanding much exposure on their rough pastures, these sheep thrive and increase rapidly, producing excellent mutton. It would certainly seem that there is a place for these valuable sheep in many parts of America, where they might improve our common kinds.

"Full Blood" and "Thoroughbred."—"R." There is no difference between these two terms as they are generally used; each means an animal belonging to a pure and distinct breed. In reality, there is no such thing amongst our domestic animals as a purely bred race, unless it be perhaps the Devon race of cattle. All the others have either been built up within a comparatively short time, or they are of mixed blood. The only pure races are the wild buffaloes, deer, etc.

Weakness in Pigs.—"W. V. C.," Troy, Ind. Fat sows are very apt to drop weak pigs. Pigs farrowed by such a sow, when they come weak, are rarely raised successfully. It is best to breed from sows that are not so much disposed to make fat; and choose only those that may be kept in a more moderate condition. For weakly, new-born pigs, there is nothing better, as a stimulant, than some warm water and gin, given with a teaspoon. After having this, they may be put to the teat, and as soon as they suck, they will be past danger for a time. To give a sow in pig a mixture of rosin, sulphur, saltpeter, copperas, madder, black antimony, assafœtida, and arsenic, might easily do mischief to the pigs.

A Stable for $25.—"R. H.," Monticello, Ill. It is hardly possible to make a building that can be used as a cow-stable, hay barn, and corn-crib, for $25, unless under some peculiar circumstances the material can be procured without money. A building 16 x 24, of the roughest kind, will require more than $25 worth of lumber or other material.

The Foreign Meat Market. — We have already stated our opinion about the probable continuance of the export trade in meat—viz., that it is merely a sort of safety valve by which the pressure of adverse markets may be relieved, and prices kept up to a certain standard; this standard being the price here, which is equivalent to the price in England with expenses deducted from it. This view of the business has been shown by events to be a correct one. The depletion of the supply by shipment has raised the market price here, until exportation will no longer pay, and it is now falling off. The effect will be to throw an additional quantity on our market and to depress prices. Then shipments will begin again. This sort of "seesaw" character will necessarily belong to the business until our product is largely increased, which will probably happen in three or four years, when the trade may take on a permanent character. It is a matter of certainty, therefore, that the supply of beef can never more depress our market below a remunerative rate, however large it may become.

How to Improve a Worn Out Field.—"T. H. R.," Defiance, Ohio. A field that has been worn out by growing corn, could hardly be made fit for corn again by growing a crop of rye to plow under. To sow the field to rye this fall, and then to clover in the spring, and let it remain in clover for two or three years, would be more likely to improve its condition.

Death of a Noted Horse.—The well known trotting mare, "Lady Thorne," died on July 1st, at the Fashion Stud Farm, Trenton, N. J. This mare was very successful on the course, until an accident happened to her at Rochester, in 1870, which caused her withdrawal. She ran 61 races, winning 51 of them, and $61,125 in money. She leaves but two descendants, one, General Washington, which is a very promising bay colt, and a two-year-old filly.

Preservation of Green Fodder.—"Subscriber," Handel, Iowa. A very full account of the ensilage of corn-fodder, which was referred to in October, 1873, was given in the *American Agriculturist* of June, 1875, with several illustrations explaining the process. This number can be had by sending 15 cents.

Rye as a Soiling Crop.—"W. A. C.," Wilmington, N. C. Rye is an excellent soiling crop. It may be sown at intervals from September until the middle of November, in the North, or later in the South. It should be cut when headed out and in the milk. It may be mown and cured as hay, if thought proper, when it makes excellent dry dodder, but should be cut into chaff before being fed.

Hoeing the Wheat Crop.—Nothing is more certain than that the wheat crop would be as much benefited by cultivation as corn or roots. By and by we shall find it necessary to sow wheat in drills, and to cultivate the space between the drills. Some time ago we described a cultivator specially designed for the wheat crop, known as the Travis wheat hoe, the invention of A. B. Travis, of Bronson, Mich. The past season this hoe has been tried in the field by some large wheat growers in Michigan, and one of these parties reports, that "although ground was hard and dry, yet the machine worked admirably. The hoes were kept between the drills of wheat by the attendant without any difficulty. Wheat can be hoed with horses as readily as corn, and as fast as it can be drilled, the implement having the same number of hoes as a drill, and when hoed it looks as much improved as a corn-field when dressed out with a cultivator. It does not destroy any larger percentage of the plants than a cultivator does in cultivating corn. Any person who can manage a plow well can manage a wheat-hoe. The work was witnessed by several of the largest farmers, one of whom was Powell Kellam, of Addison, who has 240 acres of wheat, and all pronounced it well done and a success. It prepares the soil nicely for the clover seed. We have been in the habit of harrowing our wheat, but hoeing is far preferable, because more effective."

Feeding Cotton-Seed.—"J. F. M.," Marion Co., Fla. Cotton-seed in the husk is not a wholesome food for cattle. The hard, woody husk is indigestible and irritable to the intestines, causing diarrhœa, or impaction of the rumen. The seed itself has a costive effect, and even when freed from the husk, should be fed with caution. The husk may easily be separated from the kernel by Kahnweiler's Cotton-Seed Huller, recently described in the *American Agriculturist*. This machine also breaks the kernels, and leaves them in very good condition to be fed.

Plow for Sod Land.—"W. A. C." The adamant plows, made by the New York Plow Company, Beekman St., N. Y., are excellent for plowing sod upon heavy land, or for any sort of plowing, as the mold-board will not clog in any soil. The metal is very hard, and has a bright polished surface. This plow was described and illustrated in the *American Agriculturist* for April, 1877.

Difficulty in Pigging.—"W. T. G.," Stevensville, Pa. The recently published book on "Swine Husbandry," by F. L. Coburn, is the most useful practical work on the subject. It is the book for the pig keeper whose business is making pork. It has little about the history and origin of swine, and other matters useful to few persons, but much about breeding, feeding, and caring for them, which is useful to every one who keeps a pig. The operation of removing pigs from a sow by means of the knife, is not a practicable one; the pigs may be saved, but the sow will be lost, and a litter of pigs without a mother is undesirable property.

A Persistent Weed—Bind-weed.—"A. G. C.," sends from Hunterdon Co , N. J., for name and information, a specimen of the European Bind-weed, *Convolvulus arvensis*. This is a perennial, small-flowered Morning-glory, which climbs upon other plants to the hight of about two feet, with halberd-shaped leaves, and pale-reddish flowers about half an inch across. In England this is regarded as one of the most difficult of all weeds to exterminate; it has abundant underground stems of which, when broken, every fragment will form a new plant. This is very much smaller than any of our native Bind-weeds, or Wild Morning-Glories, one of which is, in some localities, quite troublesome. If farmers and people generally, noticed plants more closely, and would detect at once an introduced weed, and on its first appearance, much future trouble would be avoided. Unfortunately it is not until a plant gets well spread and established, and its troublesome character calls attention to it, that its presence is noticed, and then it is only to be exterminated through long and difficult labor. Fortunately this plant is not widely naturalized, and occurs only near the coast, but wherever it is found it should be taken in hand at once, and not allowed to spread. It is an innocent looking, and even attractive little plant; but when it comes it comes to stay. Look out for it!

The "Traveller's Official Railway Guide," the information in which is furnished directly by the railway companies themselves, is a large volume filled with time-tables and other railroad matters, which comes to our office regularly, and which, as we have occasion to refer to it frequently, we find very useful. It is issued by the National Railway Publication Co., Philadelphia.

Dressing for Sore Teats on Cows.—"F. O. P.," Topeka, Kan. A good dressing for sore teats, is to apply clean, fresh lard with a few drops of turpentine stirred into it. The teats should be washed with warm water and soap previously. Grease the teats, and wipe them off before and after milking.

Pork-Making in Georgia.—We have on former occasions referred to the remarkable efficiency of the Commissioner of Agriculture for the State of Georgia, Doct. Thomas P. Janes, and we have before us another manifestation of his usefulness. Impressed by the fact that the State falls far short of producing sufficient pork for home consumption, and that 100,000,000 pounds of hog-products are annually purchased from abroad to supply the deficiency, the Commissioner first thoroughly investigated the present status of hog-raising in the State, learned as far as possible the reason of the deficiency, the faults in the present management, the kinds of food most profitable, and various other points. The results of his investigations, with much useful instruction, are embodied in a neat pamphlet of 100 pages, for the use of the farmers of the State.—Well done Georgia.

The St. Louis Fair has become one of the largest and most important Exhibitions in the country, and as we can not give the full data in our regular Fair List, we do so here. The Industrial portion will open on Monday, Sept. 10th. The Live Stock and Fruit, and Floral Departments, on Monday, Oct. 1st, and all departments close on Saturday, Oct. 6th. The grounds of the Association comprise 83 acres, and include a Zoölogical Garden of much interest; various improvements have been added this year, among which is a "Department of Public Comfort," similar to the one found so useful at the Centennial. Of course "that noble animal, the horse," will not be overlooked.

Selecting Seed Corn.—It has been frequently advised that before corn is cut up, one should go through the field and pick out those stalks which have borne two ears, and select these ears for future seed. This is very well if the two ears are perfect ones, but we have found it very rarely happens when one stalk bears two ears, that both ears are large, well filled out, and sufficiently good to be kept for seed. It is not wise, we think, to choose in this case the one good ear, and reject the poorer one, simply because the good ear is a twin. For there is a relationship between the two ears, and it is the whole plant, and not a part of its product only, that gives a character to that product. We would much rather take a long, sound, early ripened, heavy, plump, and well filled ear, although it be a single one, than one equally good, that has a poor nubbin on the same stalk. We do not know in the latter case whether or not the produce of the twin ear may revert to the poorer sort to which it is so closely related; while on the contrary, the single good ear would almost certainly produce good plants with equally good produce. We are content with one good ear to a stalk. If we could only secure that, we could safely expect over 100 bushels of shelled corn per acre, for with hills placed even 4x3 feet apart, and three stalks to a hill, we could then have 10,890 ears, which, if as good as the best we raise, would yield one bushel of corn to every 100 ears, and make 108 bushels per acre. When we reach this yield we ought to be satisfied. Therefore we would rather endeavor to procure one good ear to each stalk, without fail, and not, in trying to get two ears, run the risk of getting two bad ones.

Thumps in Young Pigs.—"W. B.," Columbus, Ga., sends the following method of treating young pigs for "thumps," which he has found successful. One pig of a litter four weeks old, was attacked first. Subsequently another of the same litter was similarly affected. As I killed a young pig in trying to force medicine down its throat, I thought it prudent to try another way. I begin to feed my sucking pigs at three weeks old, and as one, or two, won't eat alone, I gave the whole litter a dose each, (in as little food as possible, to insure their getting all the medicine), of castor oil, once a day for a week, with a dose of copperas every third day, and a little sulphur once or twice. In a week, the two sick pigs were entirely cured, and the whole litter improved by the treatment. If dust in the pen and yards is prevented, there will not be many cases of thumps.

Citric Acid.—"D. H.," Chicago, Ill. The manufacture of Citric Acid is carried on in England and in this country by manufacturing chemists, who make other chemical products. We have no means of knowing how profitable it is, nor have we any knowledge of a manufactory of this alone. The juice of lemons, limes, and citrons, is concentrated by evaporation, in the countries where the fruit grows, and sent abroad in casks to the manufacturers of the acid. We can only give an outline of the process, referring you to Muspratt's, or some other work on chemical manufactures, for details. We may remark that one entirely unused to chemical processes, would be very unlikely to meet with success, and that one undertaking a manufacture of this kind, should have a general knowledge of chemistry, in order to be able to overcome the difficulties he would be very sure to meet with. It would be much cheaper to engage a skilled foreman at the start. To make citric acid, the lime juice is first treated with prepared chalk, until it is neutralized, which is known by the ceasing of effervescence, when more chalk is added. The chalk, carbonate of lime, is decomposed; the carbonic acid escapes, and the lime, united with the citric acid, falls to the bottom as citrate of lime, which is not soluble in water. The citrate of lime is collected, and thoroughly washed with warm water, to remove all impurities. It is then placed in a leaden vat, and treated with a proper amount of dilute sulphuric acid, and boiled; the sulphuric acid now unites with the lime, forming sulphate of lime, which is very slightly soluble, while the citric acid being set free, remains in solution. The sulphate of lime being separated by a cloth filter, the liquid is evaporated until sufficiently concentrated for the citric acid to separate in crystals. These have to be purified by dissolving in water, straining and crystalizing again, which process has to be repeated until they, the crystals, are pure and colorless.

Harvesting Buckwheat.—Buckwheat sown late in June, or early in July, will be ready for harvesting this month. This crop suffers very easily from even a light frost, and should be cut before frosts occur. As the grain does not ripen evenly while growing, some being green, and some hardly out of blossom, while the bulk of it is ready for harvest; one need not run the risk of being caught by a frost, but may cut the crop as soon as it is well loaded. Much of the immature grain will fill out and ripen after the crop is cut, and when the straw has been heavy, we have known the blossoms even to mature their seeds while standing in the stook. The grain should lay in the swath until dry enough to rake up, when it should be gathered into sheaves while damp with dew, to avoid shelling; the sheaves not being bound, but set up with the heads tangled and pressed together, in which condition they may remain until ready for thrashing. This crop is never housed, as it heats and spoils readily, and it must be treated with great care.

Losses by "Foot and Mouth" Disease.—This disease, also known as Epizoötic Aphtha, has resulted in almost incalculable loss to English breeders and farmers. Mr. T. C. Booth, the well-known English breeder of Short-horns, recently testified before a Parliamentary committee of inquiry, that his herd had suffered to the extent of from $200,000 to $250,000. It is the loss from this disease, which has so affected the English meat market, as to make exports from America possible and profitable.

Cattle and Sheep in Colorado.—In a most surprisingly short time Colorado comes to the front rank as a cattle and sheep producing State, from very small beginnings a few years ago. Recently there have been sent from Colorado to the New York market, some grade Short-horns, which can not be excelled by the best grades of Illinois and Kentucky. This is one outgrowth of what was called the Short-horn mania, and if the "mania" should have no worse effects than this, it will be easy to stand some more of the same kind. The good stock introduced in Colorado less than five years ago, have already produced from the common Texan cows, these excellent grades; the country is well filled with equally good stock, and the supply will increase in quantity and quality. At the same time we notice reports of a public sheep-shearing, which show not only that Colorado possesses most excellent sheep, but that her Merinos are of a kind that class highly as mutton sheep. For instance, at the shearing referred to in El Paso County, among the sheep shorn were rams of the following weight of carcass and fleece, viz., of Col. Phillips' flocks, rams weighing 91, 94, 96, 97, 98, and 118 lbs., the fleeces weighing respectively 17¼, 20¼, 16, 17½, 18, and 17½ lbs.; of Willard Bros.' flock, rams weighing 135, 142, 143, and 156 lbs., with fleeces weighing 20, 23, 18¼, 21, and two 3-year old rams of lighter carcass sheared 24½ and 32½ lbs. of wool. Such rams as these must leave their mark on the Colorado flocks.

The Ayrshire (Scotch) Herd-Book.—The first volume of the Scotch Ayrshire Herd-book is in course of preparation. It is announced that entries may now be made at a charge of five shillings sterling, $1.25, for bulls, and half as much for cows and heifers.

Polled Galloway Herd-Book.—An association of breeders of Galloway cattle has been formed, and a herd-book for the registration of pure-bred animals has been published. The association has taken the name of the "Galloway Cattle Society," (which might more properly and grammatically have been called the Galloway Cattle Breeders' Society,) with the Duke of Buccleuch as President, and the Earl of Galloway as Vice-president.

Trees in the City of London.—The "Gardener's Magazine," of June 30th, gives a list of the trees now growing in the City of London proper. From this it appears that there are only about 200, in 30 species and varieties, and these are mostly in old church-yards, and the courts of public buildings. The list is noticeable for the absence of all cone-bearing trees; the Oriental Plane (or Button-ball as we call its American brother), the Linden and Balsam Poplar being most numerous.

State, County, and other Fairs in 1877.

State and Industrial Fairs.

American Institute	New York	Sept. 12-Nov. 12
American Pomological	Baltimore	Sept. 12-14
California	Sacramento	Sept. 17-22
Chicago Industrial Ex.	Chicago, Ill	Aug. 29-Oct. 13
Georgia	Atlanta	Oct. 15-20
Illinois	Freeport	Sept. 17-22
Indiana	Indianapolis	Sept. 24-29
Iowa	Cedar Rapids	Sept. 17-22
Kentucky	North Florence	Aug. 28-31
Maine Dairymen	Orono	Sept. 18-20
Maine Pomological	Waterville	Sept. 25-28
Michigan	Jackson	Sept. 17-22
Minnesota	Minneapolis	Sept. 3-8
Missouri	Kansas City	Sept. 17-22
National Ag'l Congress	Chicago, Ill	Sept. 25-27
Nebraska	Lincoln	Sept. 24-28
Nevada	Reno	Oct. 15-20
Newburgh Bay Hort'l	Newburgh	Sept. 26-28
New England	Portland	Sept. 3-7
New Jersey	Waverley	Sept. 17-22
New York	Rochester	Sept. 17-21
Northwest Exposition	Dubuque	Sept. 10-14
Rhode Island Ag'l Soc.	Woonsocket	Oct. 2-3
Ohio	Columbus	Sept. 10-14
Oregon	Salem	Oct. 8-13
Quincy Horse Fair	Quincy, Ill	Sept. 4-7
St. Joseph Agr'l Ex'n.	St. Joseph, Mo	Sept. 10-16
St. Louis	St. Louis, Mo.	Oct. 1-6
St. Louis Indus'l Exp'n.	St. Louis, Mo	Sept. 10-Oct. 6
Shenandoah Valley	Winchester, Va	Oct. 9-12
Texas	Austin	Oct. 16-20
Virginia	Richmond	Oct. 30-Nov. 4
West Virginia	Clarksburg	Sept. 12-14
Wisconsin	Janesville	Sept. 10-14
Worcester Hort. Soc'y	Worcester, Mass.	Sept. ——

PROVINCIAL FAIRS.

Nova Scotia	Kentville	Oct. 1-5
Ontario	London	Sept. 24-28
Quebec	Quebec	Sept. 18-21

District Fairs.

Ohio, Central	Mechanicsburg	Sept. 5-7
Ohio, Central	Orrville	Oct. 10-13
Kentucky North	Florence	Aug. 28-31
Ohio, Southern	Dayton	Sept. 24-28
Indiana, Northeastern	Waterloo	Oct. 2-5
Indiana, Southeastern	Aurora	Sept. 4-7
Iowa, Northwest	Dubuque	Sept. 10-14
Iowa, Northern	Pottsville	Oct. 2-5
Michigan, Central	Lansing	Oct. 2-5
Wisconsin Central	Watertown	Sept. 24-28
Wisconsin Northwest	Oshkosh	Sept. 24-28

County and Town Fairs.

MAINE.

Androscoggin	Lewiston	Oct. 2-4
Franklin	Farmington	Oct. 10-12
Franklin Central	Strong	Oct. 3-4
Kennebec	Readfield	Oct. 2-4
Penobscot	Orono	Sept. 18-20
Piscataquis East	Milo	Sept. 26-27
Sagadahoc	Topsham	Oct. 9-11
Somerset Central	Skowhegan	Sept. 18-20
Washington	Pembroke	Sept. 26-27

NEW HAMPSHIRE.

Stratford	Great Falls	Sept. 11-13

VERMONT.

Caledonian	——	Sept. 18-20
Chittenden	Essex Junction	Sept. ——
Contoocook Valley	Hillsboro Bridge	Sept. 11-12
Franklin	Sheldon	Sept. 19-21
Washington	Montpelier	Sept. 11-13
Windham	Newfane	Sept. 12-13
Windsor	Woodstock	Sept. 25-27

MASSACHUSETTS.

Barnstable	Barnstable	Sept. 18-19
Berkshire	Pittsfield	Oct. 2-4
Bristol	Taunton	Sept. 25-27
Bristol Center	Myrick's	Sept. 12-14
Brockton	Brockton	Oct. 3-5
Deerfield Valley	Charlemont	Sept. 13-14
Essex	Lawrence	Sept. 25-26
Franklin	Greenfield	Sept. 27-29
Hampden	Springfield	Sept. 25-26
Hampden, East	Palmer	Sept. 18-19
Hampshire	Amherst	Sept. 18-19
Hampshire, Franklin, etc.	Northampton	Oct. 3-5
Hanson	Hanson	Sept. 25-26
Highland	Middlefield	Sept. 13-14
Hingham	Hingham	Sept. 26-27
Hoosac Valley	North Adams	Sept. 18-19
Housatonic	Great Barrington	Sept. 26-28
Marshfield	Marshfield	Oct. 3-5
Martha's Vineyard	West Tisbury	Oct. 2-3
Middlesex	Concord	Sept. 27-29
Middlesex, North	Lowell	Sept. 25-26
Middlesex, South	Framingham	Sept. 18-19
Nantucket	Nantucket	Sept. 5-6
Norfolk	Readville	Sept. 27-28
Plymouth	Bridgewater	Sept. 19-21
Union	Blandford	Sept. 19-21
Worcester	Worcester	Sept. 20-21
Worcester, North	Fitchburg	Sept. 25
Worcester, Northwest	Athol	Oct. 2-3
Worcester, South	Sturbridge	Sept. 13-14
Worcester, Southeast	Milford	Sept. 25-27
Worcester, West	Barre	Sept. 27-28

RHODE ISLAND.

Washington	Kingston	Sept. 18-20
Woonsocket	Woonsocket	Oct. 2-4

CONNECTICUT.

Danbury Town	Danbury	Oct. 2-6
Fairfield	Norwalk	Sept. 18-22
New Haven	Meriden	Sept. 19-21
Windham	Brooklyn	Sept. 18-20
Woodstock	Woodstock	Sept. 10-12

NEW YORK.

Alleghany	Angelica	Oct. 2-4
Cattaraugus	Randolph	Sept. 12-14
Cayuga	Auburn	Sept. 11-13
Chautauqua	Jamestown	Sept. 18-21
Chemung	Elmira	Sept. 26-29
Chenango	Sherburne	Sept. 13-15
Columbia	Chatham	Sept. 19-21
Cortland	——	Sept. 12-13
Delaware	Delhi	Sept. 11-13
Essex	Westport	Sept. 11-13
Franklin	Malone	Sept. 25-27
Fulton	Johnstown	Sept. 17-19
Genesee	Batavia	Sept. 7-8
Greene	Cairo	Sept. 19-20
Hamilton	Earlville	Sept. 19-21
Herkimer	Winfield	Sept. 4-6
Jefferson	Watertown	Sept. 11-13
Lewis	Lowville	Sept. 11-14
Livingston	Geneseo	Sept. 26 27
Madison	Lennox	Sept. 25-28
Niagara	Lockport	Sept. 20-22
Onondaga	Manlius	Sept. 26-28
Oneida	Booneville	Sept. 5-7
Oneida	Rome	Sept. 17-21
Oneida	Taberg	Sept. 24-26
Oneida	Trenton	Sept. 25-27
Oneida	Waterville	Sept. 24-25
Ontario	Canandaigua	Sept. 25-27
Orange	Montgomery	Sept. 26-28
Orleans	Albion	Sept. 21-22
Oswego	Fulton Station	Sept. 18-20
Oswego	Mexico	Sept. 11-13
Oswego	Phœnix	Sept. 11-13
Otsego	Edmeston	Sept. 11-13
Otsego	Oneonta	Sept. 11-13
Otsego	Schenevus	Sept. 20-22
Otsego	Unadilla	Sept. 12-14
Queens	Mineola	Oct. 2-4
Richland	Sandy Creek	Sept. 5-7
Rockland	Spring Valley	Sept. 26-28
St. Lawrence	Gouverneur	Aug. 29-31
St. Lawrence	Potsdam	Sept. 18-20
Saratoga	Saratoga Springs	Sept. 18-21
Schenectady	Schenectady	Sept. 25-28
Schoharie	Schoharie	Sept. 25-27
Schuyler	Watkins	Sept. 20-22
Seneca	Ovid	Oct. 2-4
Steuben	Bath	Sept. 26-28
Suffolk	Riverhead	Sept. 25-27
Tioga	Owego	Sept. 26-28
Tompkins	Ithaca	Sept. 11-13
Warren	Glen's Falls	Sept. 11-14
Warren	Warrensburg	Sept. 11-14
Washington	Sandy Hill	Sept. 4-7
Wayne	Lyons	Sept. 26-28
Yates	Rushville	Sept. 27-28

NEW JERSEY.

Atlantic	Egg Harbor City	Sept. 24-25
Burlington	Mt. Holly	Oct. 9-11
Monmouth	Freehold	Sept. 11-13
Warren	Belvidere	Sept. 11-14

PENNSYLVANIA.

Bradford, East	Towanda	Sept. 25-27
Bradford	Troy	Sept. 13-14
Bucks	Doylestown	Oct. 2-5
Bucks	Kutstown	Sept. 18-21
Chester	Westchester	Sept. 20-22
Columbia	Bloomsburg	Oct. 10-12
Mifflin	Lewistown	Sept. 25-28
Washington	Cannonsburg	Sept. 25-27

OHIO.

Allen	Lima	Sept. 18-21
Ashtabula	Jefferson	Sept. 25-28
Athens	Athens	Oct. 4-5
Belmont	St. Clairsville	Sept. 19-21
Brown	Georgetown	Sept. 11-14
Butler	Hamilton	Oct. 1-
Carroll	Carrollton	Oct. 10-12
Champaign	Urbana	Sept. 22-28
Clarke	Springfield	Aug. 21-24
Clermont	Boston	Sept. 4-7
Clinton	Wilmington	Sept. 4-7
Columbiana	New-Lisbon	Sept. 25-27
Coshocton	Coshocton	Sept. 25-29
Crawford	Bucyrus	Sept. 25-
Cuyahoga	Cleveland	Sept. 11-13
Darke	Greenville	Sept. 18-21
Defiance	Defiance	Sept. 18-21
Delaware	Delaware	Sept. 26-28
Erie	Sandusky	Sept. 25-28
Fairfield	Lancaster	Oct. 10-13
Fulton	Wauseon	Sept. 19-21
Gallia	Galliopolis	Sept. 26-28
Geauga	Burton	Sept. 24-26
Greene	Xenia	Sept. 5-7
Guernsey	Cambridge	Sept. 18-20
Hamilton	Carthage	Sept. 4-7
Hancock	Findlay	Oct. 3-6
Hardin	Kenton	Sept. 25-29
Harrison	Cadiz	Oct. 2-4
Hocking	Logan	Oct. 3-6
Holmes	Millersburg	Oct. 2-5
Jackson	Jackson C. H.	Sept. 13-15
Jefferson	Smithfield	Sept. 26-28
Knox	Mt. Vernon	Sept. 25-27
Lake	Painesville	Sept. 26-28
Lawrence	Ironton	Sept. 18-21
Licking	Newark	Oct. 2-8
Logan	Bellefontaine	Oct. 2-4
Lorain	Elyria	Sept. 19-21
Lucas	Toledo	Sept. 18-21
Mahoning	Canfield	Oct. 2-4
Marion	Marion	Oct. 2-10
Medina	Medina	Sept. 18-20
Meigs	Pomeroy	Sept. 14-15
Miami	Troy	Sept. 18-21
Morgan	McConnellsville	Sept. 18-21
Morrow	Mt. Gilead	Oct. 2-5
Muskingum	Zanesville	Sept. 4-8
Ottawa	Port Clinton	Oct. 9-11
Paulding	Paulding	Sept. 26-28
Perry	New Lexington	Sept. 26-28
Pickaway	Circleville	Sept. 26-28
Portage	Ravenna	Sept. 25-27
Putnam	Ottawa	Sept. 25-28
Richland	Mansfield	Sept. 18-21
Ross	Chillicothe	Sept. 4-7

Sandusky	Fremont	Oct. 2- 5
Seneca	Tiffin	Oct. 3- 5
Shelby	Sidney	Sept. 18-21
Stark	Canton	Oct. 10-13
Summit	Akron	Oct. 2- 5
Trumbull	Warren	Sept. 18-21
Tuscarawas	Canal Dover	Sept. 25-28
Union	Marysville	Oct. 2- 5
Warren	Lebanon	Sept. 19-21
Washington	Marietta	Sept. 26-28
Wayne	Orrville	Oct. 10-13
Wayne	Wooster	Sept. 26-28
Williams	Bryan	Sept. 26-28
Wood	Tontogany	Sept. 25-28

INDIANA.

Allen	Fort Wayne	Sept. 10-14
Barber	Worthington	Sept. 4- 8
Boone	Lebanon	Oct. 2- 5
Bridgeton Union	Bridgeton	Aug. 27-31
Cass	Logansport	Sept. 10-15
Clarke	Charlestown	Sept. 11-13
Clinton	Frankfort	Sept. 10-14
Daviess	Washington	Sept. 11-15
Delaware	Muncie	Sept. 11-14
Dunkirk Union	Dunkirk	Sept. 4- 7
Edinburg Union	Edinburg	Sept. 18-22
Elkhart	Goshen	Oct. 2- 5
Fountain, War'n & Ver.	Covington	Sept. 25-28
Fulton	Rochester	Oct. 4- 6
Gibson	Princeton	Sept. 17-21
Greene	Linton	Oct. 1- 5
Hamilton	Cicero	Aug. 28-31
Harrison	Corydon	Sept. 11-14
Hendricks	Danville	Sept. 4- 7
Henry, Mad'n & Del'e.	Middle Fork	Aug. 14-17
Henry	Newcastle	Aug. 21-24
Huntington	Huntington	Sept. 18-21
Jasper	Rensselaer	Sept. 18-21
Jay	Portland	Sept. 25-28
Kingstown-Union	Kingstown	Aug. 28-31
Knox	Vincennes	Oct. 8-13
La Grange	La Grange	Sept. 25-28
Laporte	Laporte	Sept. 19-21
Marion	Valley Mills	Sept. 6- 8
Miami	Peru	Sept. 18-21
Middle Fork	Middletown	Aug. 27-31
Mitchell District	Mitchell	Sept. 25-29
Morgan	Martinsville	Sept. 11-14
Noble	Ligonier	Sept. 19-21
Orange	Paoli	Sept. 25-29
Perry	Rome	Oct. 3- 6
Pike	Petersburg	Sept. 3- 7
Porter	Valparaiso	Sept. 25-28
Prairie Farmer.	Francesville	Oct. 2- 5
Putnam	Greencastle	Aug. 27-31
Randolph	Winchester	Sept. 18-21
Remington Union	Remington	Aug. 28-31
Ripley	Osgood	Aug. 14-17
Rush	Rushville	Sept. 11-14
Russellville Union	Russellville	Aug. 20-24
Steuben	Angola	Oct. 9-12
Switzerland & Ohio	East Enterprise	Sept. 11-14
Thornton Union	Thornton	Sept. 17-22
Tippecanoe	Lafayette	Sept. 3- 8
Vermillion	Newport	Sept. 11-14
Wabash	Wabash	Sept. 11-14
Warren	West Lebanon	Sept. 10-15

ILLINOIS.

Adams	Camp Point	Sept. 4- 7
Boone	Belvidere	Sept. 25-28
Brown	Mt. Sterling	Sept. 25-28
Bureau	Princeton	Sept. 11-14
Carroll	Mt. Carroll	Sept. 4- 7
Cass	Virginia	Aug. 28-31
Champaign	Champaign	Sept. 3- 6
Christian	Taylorville	Sept. 18-21
Clark	Marshall	Sept. 19-21
Clay	Flora	Sept. 25-28
Clinton	Carlisle	
Coles	Charleston	Sept. 11-15
Crawford	Robinson	Oct. 2- 5
Cumberland	Majority Point	Oct. 3- 6
De Kalb	Sycamore	Sept. 25-27
De Witt	Clinton	Aug. 14-17
Douglas	Tuscola	Sept. 4- 8
Du Page	Wheaton	Sept. 12-14
Edgar	Paris	Sept. 4- 7
Edwards	Albion	Oct. 2- 5
Fayette	Vandalia	Sept. 19-21
Ford	Paxton	Sept. 11-14
Franklin	Benton	Sept. 25-28
Fulton	Avon	Sept. 25-28
Fulton	Canton	Oct. 9-12
Gallatin	Shawneetown	Sept. 25-28
Greene	Carrollton	Oct. 16-19
Grundy	Morris	Sept. 25-28
Hamilton	McLeansboro	
Hardin	Elizabethtown	Sept. 26-29
Henderson	Biggsville	Oct. 2- 5
Henry	Cambridge	Aug. 27-31
Iroquois	Onargo	Sept. 4- 7
Jackson	Murphysboro	Oct. 9-12
Jasper	Newton	Sept. 25-28
Jersey	Jerseyville	Oct. 9-12
Jo Daviess	Galena	Sept. 25-28
Jo Daviess	Warren	Oct. 2 -5
Kane	Aurora	Sept. 4- 7
Kankakee	Kankakee	Sept. 25-28
Kendall	Bristol	Sept. 11-13
Knox	Knoxville	Oct. 2- 5
Lake	Libertyville	Sept.
Lake	Waukegan	Oct. 1- 6
La Salle	Ottawa	Sept. 3- 8
Lawrence	Lawrenceville	Sept. 26-29
Lee	Dixon	Sept. 11-13
Livingston	Pontiac	Sept. 4- 7
Livingston	Fairbury	Sept. 11-14
Logan	Atlanta	Aug. 27-31
Logan	Lincoln	Aug. 20-25
Macon	Decatur	Sept. 11-14
Macoupin	Carlinville	Sept. 4- 8
Marion	Centralia	Sept. 24-27
Marshall	Wenona	Sept. 24-28
Mason	Havana	Sept. 25-28
Massac	Metropolis	Oct. 10-13
McDonough	Macomb	Aug. 27-Sept. 1
McHenry	Marengo	Sept. 4- 7
McHenry	Woodstock	Oct. 2- 5
McLean	Bloomington	Sept. 4- 7
Menard	Petersburg	Sept. 4- 7
Mercer	Aledo	Sept. 25-28
Montgomery	Hillsboro	Sept. 25-28
Morgan	Jacksonville	Sept. 10-14
Ogle	Rochelle	Sept. 24-29
Ogle	Oregon	Sept. 4-.7
Peoria	Peoria	Sept. 11-14
Perry	Pinckneyville	Oct. 3- 5
Piatt	Monticello	Aug. 14-17
Pike	Pittsfield	Sept. 25-28
Pope	Golconda	Oct. 3- 6
Putnam	Hennepin	Sept. 4- 6
Randolph	Sparta	Sept. 26-28
Randolph	Chester	Oct. 16-19
Rock Island	Hillsdale	Sept. 13-15
Sangamon	Springfield	Sept. 24-29
Schuyler	Rushville	Oct. 3- 5
Shelby	Shelbyville	Sept. 25-28
Stark	Toulon	Sept. 25-28
St. Clair	Belleville	Sept. 4- 7
Union	Jonesboro	Sept. 11-14
Vermillion	Catlin	Sept. 26-28
Vermillion	Danville	Sept. 18-22
Vermillion	Hoopeston	Aug. 27-31
Warren	Monmouth	Sept. 11-14
Wayne	Fairfield	Sept. 18-21
Whiteside	Albany	Sept. 12-14
Whiteside	Sterling	Sept. 25-28
Will	Joliet	Sept. 10-14
Williamson	Marion	Oct. 2- 4
Winnebago	Rockford	Sept. 11-14

MICHIGAN.

Bay	Bay City	Sept. 18-21
Berrien	Niles	Oct. 2- 5
Branch	Coldwater	Sept. 25-28
Central	Hubbardston	Sept. 25-28
Clinton	St. Johns	Sept. 12-14
Eaton	Charlotte	Sept. 26-28
Genesee	Flint	Oct. 2- 5
Grand Traverse	Traverse City	
Hillsdale	Hillsdale	Oct. 2- 5
Ingham	Mason	Sept. 26-28
Ionia	Ionia	Sept. 17-21
Kalamazoo	Kalamazoo	Sept. 26-29
Kent	Grand Rapids	Sept. 25-27
Lenawee	Adrian	Sept. 26-28
Livingston	Howell	Sept. 25-28
Macomb	Armada	Oct. 3- 5
Macomb	Mt. Clemens	Sept. 25-27
Monroe	Monroe	Oct. 2- 5
Oakland	Pontiac	Sept. 26-28
Saginaw	Saginaw City	Sept. 11-14
Sanilac	Lexington	Oct. 9-10
Shiawassee	Owosso	Sept. 26-28
Van Buren	Paw Paw	Oct. 2- 5

WISCONSIN.

Dodge	Juneau	Sept. 18-20
Fon du Lac	Fon du Lac	Sept. 18-20
Jefferson	Jefferson	Sept. 18-21
Sheboygan	Sheboygan Falls	Sept. 19-21

IOWA.

Allamakee	Waukon	Sept. 10-14
Appanoose	Centreville	Sept. 4- 6
Black Hawk	East Waterloo	Sept. 26-28
Bremer	Waverley	Sept. 25-26
Buchanan	Independence	Oct. 2- 5
Cedar	Tipton	Oct. 2- 4
Cherokee	Cherokee	Oct. 4- 6
Chickasaw	New Hampton	Sept. 26-28
Clarke	Osceola	Sept. 5- 7
Clayton	McGregor	Sept. 19-21
Crawford	Denison	Sept. 26-28
Decatur	Leon	Sept. 12-14
Delaware	Manchester	Sept. 25-28
Des Moines	Burlington	Sept. 25-28
Fayette	West Union	Sept. 27-29
Franklin	Hampton	Sept. 26-28
Greene	Jefferson	Sept. 13-15
Hardin	Eldora	Sept. 25-28
Henry	Mt. Pleasant	Sept. 11-14
Iowa	Marengo	Sept. 11-14
Jasper	Newton	Sept. 25-27
Johnson	Iowa City	Sept. 25-28
Jones	Monticello	Sept. 4- 7
Lee	West Point	Sept. 18-21
Louisa	Wapello	Sept. 25-28
Lucas	Chariton	Sept. 25-27
Lyon	Rock Rapids	Oct. 3- 5
Madison	Winterset	Sept. 11-14
Mahaska	Oskaloosa	Aug. 28-31
Marshall	Marshalltown	Sept. 11-13
Monroe	Albia	Sept. 26-28
Muscatine	Muscatine	Sept. 25-28
O'Brien	Primghar	
Page	Clarinda	Sept. 18-21
Plymouth	Le Mars	Sept. 26-28
Ringgold	Mt. Ayr	Sept. 12-14
Scott	Davenport	Sept. 3- 6
Taylor	Bedford	Sept. 26-29
Union	Mechanicsville	Sept. 25-28
Union	West Liberty	Sept. 11-14
Van Buren	Keosauqua	Sept. 18-22
Washington	Washington	Oct. 2- 5
Winneshiek	Decorah	Sept. 18-20

MISSOURI.

Newton	Neosha	Sept. 26-28
Washington	West Bend	Oct. 2- 4

KENTUCKY.

Anderson	Lawrenceburg	Aug. 14
Boone	Florence	Aug. 28
Bourbon	Paris	Sept. 4
Boyle	Danville	Aug. 8
Fayette	Lexington	Sept. 11
Franklin	Frankfort	Sept. 4
Harrison	Cynthiana	Aug. 31
Henry	Eminence	Aug. 22
Madison	Richmond	Aug. 13
Montgomery	Mt. Sterling	Sept. 8
Nelson	Bardstown	Sept. 4
Owen	Owenton	Oct. 2
Shelby	Shelbyville	Aug. 7

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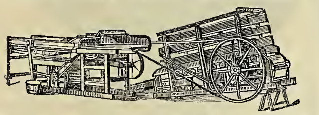

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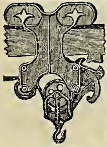

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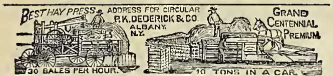

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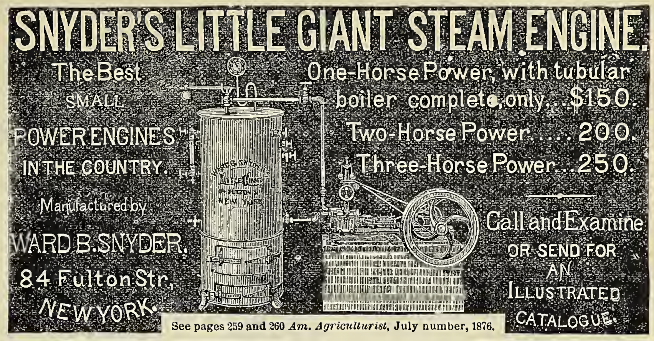

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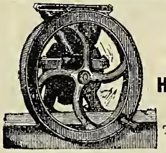

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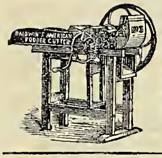

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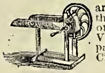

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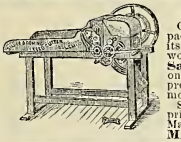

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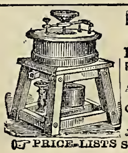

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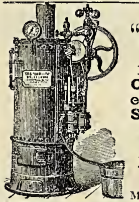

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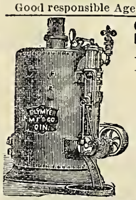

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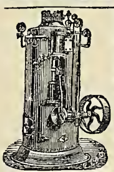

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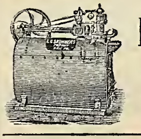

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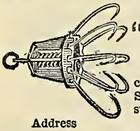

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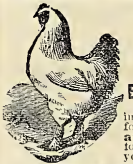

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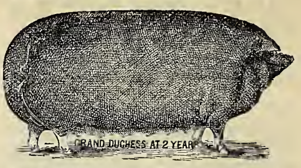

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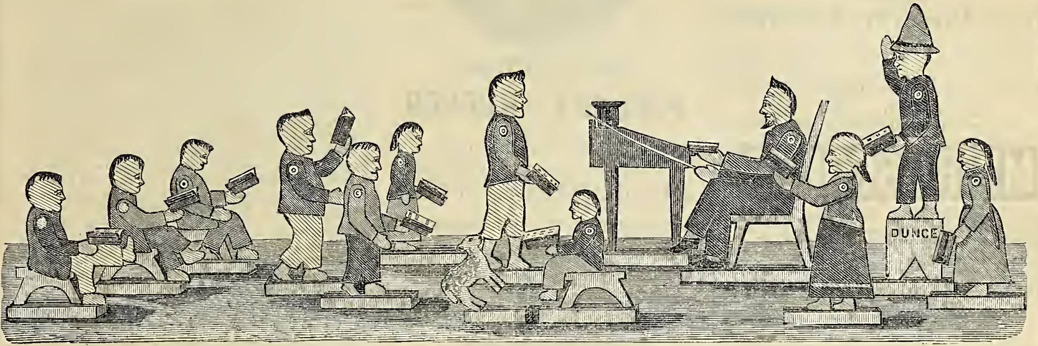

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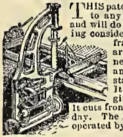

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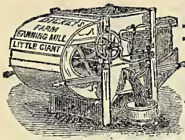

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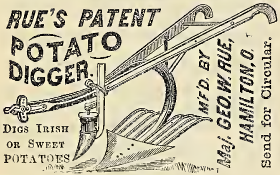

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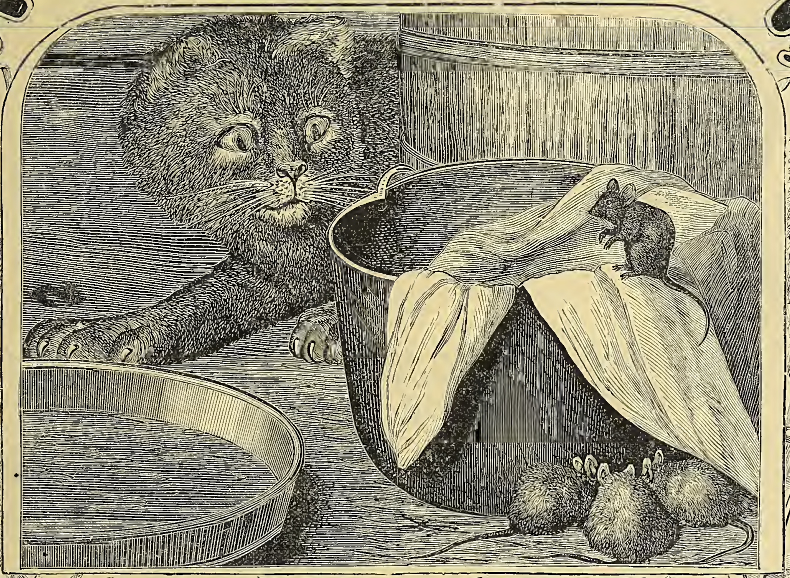

Vol. XXXVI

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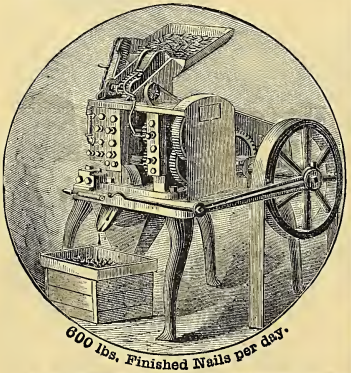

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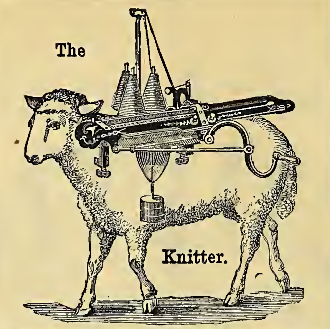

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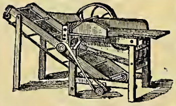

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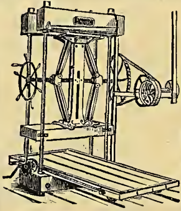

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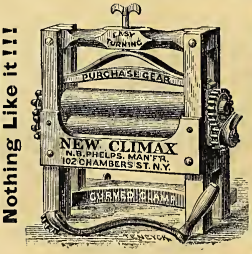

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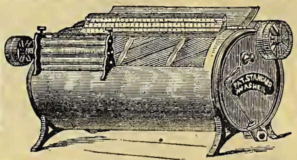

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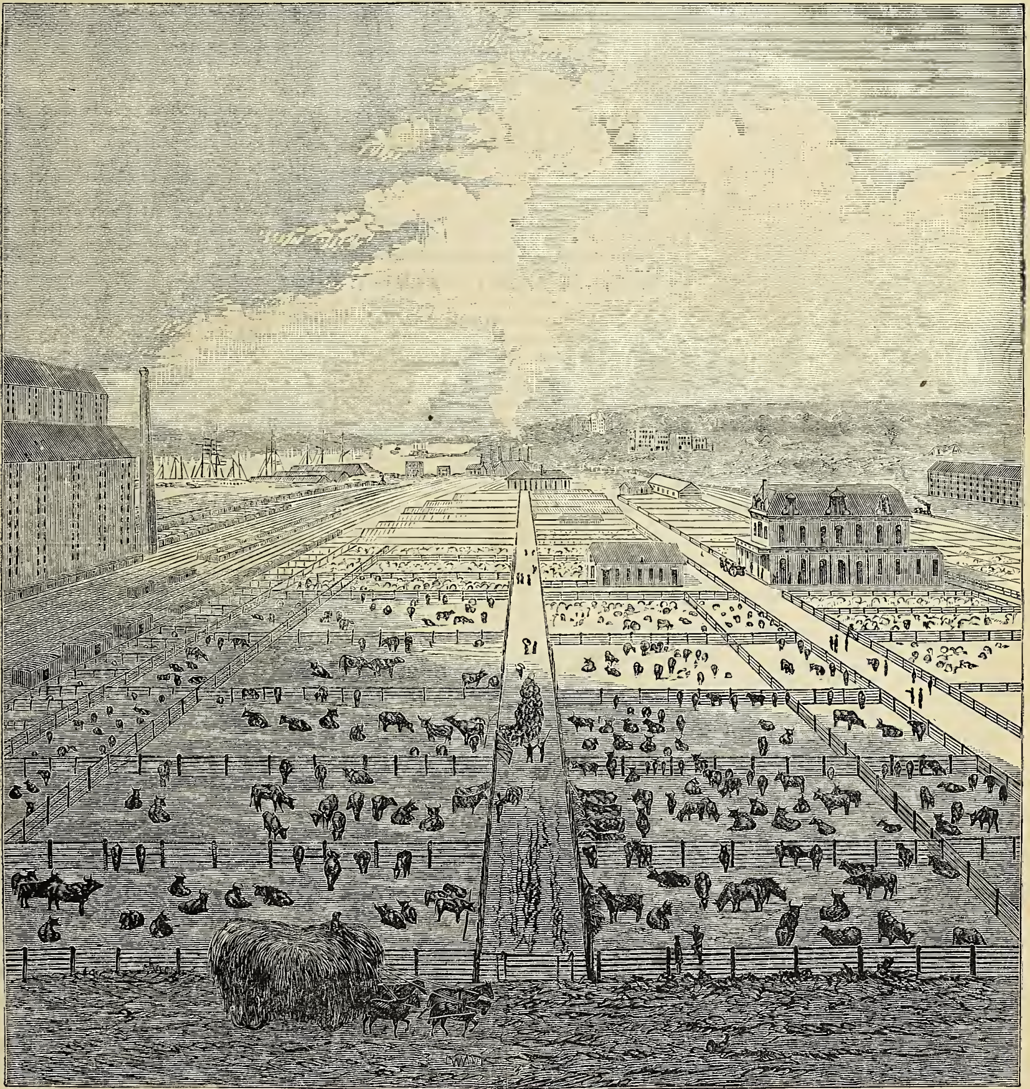

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Calendar for October.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	M	5 58	5 42	morn	5 56	5 42	morn	5 56	5 42	morn
2	T	5 59	5 40	0 24	5 58	5 41	0 29	5 57	5 41	0 35
3	W	6 0	5 38	1 44	6 0	5 39	1 47	5 58	5 40	1 51
4	T	6 1	5 36	3 3	6 0	5 37	3 5	5 59	5 38	3 7
5	F	6 2	5 35	4 22	6 1	5 36	4 22	6 0	5 37	4 23
6	S	6 3	5 33	sets	6 2	5 34	sets	6 1	5 35	sets.
7	S	6 4	5 31	5 36	6 3	5 32	5 39	6 2	5 33	5 43
8	M	6 5	5 30	6 6	6 4	5 31	6 11	6 3	5 32	6 16
9	T	6 6	5 28	6 41	6 5	5 29	6 47	6 4	5 30	6 54
10	W	6 7	5 26	7 25	6 6	5 28	7 32	6 5	5 29	7 39
11	T	6 8	5 25	8 17	6 7	5 26	8 25	6 6	5 27	8 32
12	F	6 10	5 23	9 16	6 8	5 24	9 23	6 7	5 26	9 29
13	S	6 11	5 21	10 19	6 10	5 23	10 25	6 8	5 25	10 32
14	S	6 12	5 20	11 24	6 11	5 21	11 29	6 9	5 23	11 35
15	M	6 13	5 18	morn	6 12	5 20	morn	6 10	5 22	morn
16	T	6 15	5 16	0 28	6 13	5 18	0 32	6 11	5 20	0 36
17	W	6 16	5 15	1 30	6 14	5 17	1 33	6 12	5 19	1 35
18	T	6 17	5 13	2 32	6 15	5 15	2 34	6 13	5 17	2 35
19	F	6 18	5 12	3 34	6 16	5 14	3 35	6 14	5 16	3 35
20	S	6 19	5 10	4 37	6 17	5 12	4 36	6 15	5 15	4 35
21	S	6 20	5 9	5 41	6 18	5 11	5 38	6 16	5 13	5 36
22	M	6 21	5 7	rises	6 19	5 10	rises	6 17	5 12	rises
23	T	6 23	5 6	5 25	6 20	5 8	5 30	6 18	5 11	5 36
24	W	6 24	5 4	6 2	6 21	5 6	6 8	6 19	5 9	6 16
25	T	6 25	5 3	6 50	6 23	5 5	6 58	6 20	5 8	7 6
26	F	6 26	5 1	7 48	6 24	5 4	7 56	6 21	5 7	8 3
27	S	6 28	5 0	8 58	6 25	5 3	9 4	6 22	5 5	9 11
28	S	6 29	4 59	10 11	6 26	5 1	10 17	6 23	5 4	10 22
29	M	6 39	4 57	11 29	6 27	5 0	11 33	6 24	5 3	11 37
30	T	6 31	4 56	morn	6 29	4 59	morn	6 26	5 2	morn
31	W	6 33	4 55	0 45	6 30	4 58	0 48	6 27	5 1	0 50

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	6	5 14 ev.	5 2 ev.	4 50 ev.	4 38 ev.	4 8 ev.
1st Quart	13	10 58 ev.	10 46 ev.	10 34 ev.	10 22 ev.	9 52 ev.
Full M'n	22	2 47 mo.	2 35 mo.	2 23 mo	2 11 mo.	1 41 mo.
3d Quart.	29	9 37 mo.	9 25 mo.	9 13 mo	9 1 mo.	8 31 mo.

AMERICAN AGRICULTURIST.

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There have been few seasons at the close of which farmers have been better satisfied with the general result of their year's labor than the present one. The harvest, with few exceptions, has been all that could be reasonably desired. Crops of wheat of 40 to 50 bushels per acre are not unfrequently reported, and that great bugbear, the potato-beetle, has been easily vanquished. The season has certainly been favorable; but we have the best reason to know that better farming has greatly helped to produce the excellent crops which now overflow the barns and granaries. Had it not been that the markets have been aided by the occurrence of war in Eastern Europe, there would still have been handsome returns for the year's work. It is evident on every hand that our system of agriculture is improving year by year, and this improvement has been, of late, more rapid than ever. The hints and helps in the way of information, both practical and scientific, which for thirty-five years past have been furnished by the *American Agriculturist*, have not been without their results. During this period many millions of copies have been spread far and wide, to every corner of this country, and many have gone to other countries, and thousands upon thousands of farmers have learned something new and valuable from them every month. The effect of this, not to speak of a similar influence for good that has been exerted by many of our excellent agricultural cotemporaries, cannot possibly have failed to help the practice of agriculture towards a much higher standard. "Line upon line, precept upon precept," like the continual dropping of water which wears the stone, has undoubtedly encouraged the use of better methods of work, greater economy of management, the employment of labor-saving implements and machines, the use of better seed, more fertilizers, both home made and artificial ones, the breeding of better stock and improved modes of feeding them, the building of better barns and stables, and better sanitary regulations in these and the yards about them, and last, but not least, better arangements of domestic affairs. All these, and more that might be mentioned, which have been in our columns continually kept before the attention of farmers, have helped to bring about the results referred to. But the limits of improvement have by no means been reached. In fact, we have but as yet only begun to improve, and until we can see no place for any better work or methods of work, our efforts must continue. Every year the field widens and lengthens. The past year more than 25,000 new farms have been opened, and this has not been a good year for such enterprise. We are, also, every year finding new foreign markets, and new industries at home are making more customers for our produce. The farmer's vocation is a sure one, it is his business to make it a profitable one, by bringing to it all the skill, intelligence, and industry, that may be possible.

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Hints for Work.

Fall Wheat.—Where the soil and season admit of it, wheat may still be sown the early part of this month. This may be done upon rich, well-drained soil, in the Middle and Southern States. Late sowing helps us to escape the fly, but brings danger of the midge and rust. These latter may be avoided (while we escape the first) by stimulating the crop to a quick growth by selecting midge-proof varieties, and by pickling the seed. For all such late sowings, a generous dressing of some active ammoniacal fertilizer should be given. Ammonia is needed now, and pure guano conveys this to the roots; 150 lbs. per acre may be applied.

A Pickle for Late-sown Wheat is made by dissolving 4 ounces of sulphate of copper (blue vitriol), to every gallon of water needed. Put 2 bushels of wheat in a tub or barrel, and pour the above named solution over it so that it shall be evenly distributed through the grains. Stir the wheat thoroughly and turn it out on a clean barn floor. Then stir in enough dry newly-slaked lime to cover every grain.

Rye may be sown all this month; but the later the sowing, the more seed should be used. For a soiling crop in early spring, sow 3 bushels per acre.

Water Furrows should be made in all grain fields as soon as the sowing is finished. If left later, the growing plants will be injured by the trampling and the passage of the plow. We would do this even on underdrained land if the surface needs it. In this case the furrows should start from between the drains to low places over them.

Fall Fallowing.—Weedy meadows may be turned over in this month; plow corn stubbles and cultivate two or three times before winter.

Fall Plowing.—Ground for oats should be fall-plowed and left ridged so that the cultivator or harrow may fit it for seeding in early spring. The land for early potatoes should also be plowed *and manured.* Spread the manure upon the plowed ground and leave until spring, then plow it under.

Sod Ground for Corn may be liberally top dressed with coarse manure now, but not plowed until near the time for planting in the spring, when a dressing of artificial corn fertilizer will be sufficient for a good crop. Better employ an extra team in spring to plow for corn, than turn a sod now. There is other and much more pressing work at this season.

Cutting Corn should not be delayed. Every day's delay after corn is fit to cut, greatly damages the fodder, the value of which is no small item.

Husking may begin at once, then the fodder can be taken care of as it should be. When well cribbed, the corn will dry as quickly or better than in the stook exposed to storms. Use Hall's husking gloves, which will spare the hands, unless a husking machine can be hired. The Philips' husking machine will make short work of this business.

Stacking Corn-Fodder.—We prefer to stack our fodder rather than put it under cover. It is too bulky for the barn, and if well stacked will keep in good condition. We make small stacks holding five or six loads, and one of these may be brought into the barn as it may be wanted during the winter. These stacks may be made in the field. See further remarks on this subject at page 369.

Roots.—Mangels and sugar beets should be harvested early. Frost injures them. Frozen beet-leaves are not wholesome food for stock, but if they are gathered before frost, they make excellent fodder. These may be pitted and kept for some weeks yet, if sprinkled with salt and lightly covered with earth. If the leaves are pulled before the beets are dug, they should be twisted off, and not cut, or the roots "bleed" considerably. When treated as above, the leaves will not scour the animals, even when fed to them liberally.

Weeds.—All weeds that have matured seed should be cut when wet with dew, and when dry should be burned. If not thus disposed of, they will be a source of much mischief. Have all the screenings from the thrashing machine ground up at the mill, and mixed with meal for pigs. In no case let them go into the barn-yard or manure heap.

Horses that are still pastured, should have some extra feed to keep them in good condition. The late growth contains too much water to make sufficiently nutritious feed. Besides, the changing temperature makes increased demands upon the system, which must be met with an increase of food.

Milch Cows can not be kept up to a profitable condition on pasture alone. It will pay well to give them two quarts of feed daily. It is a wise plan to begin winter rations on the first of October. They not only give more and better milk now, but come into the winter stronger, and in better condition.

For Fattening or Feeding Stock, only thrifty, well grown animals should be chosen. To fill out a lean, thrifty animal with fat, adds not only to the weight, but to the value of the meat. The chief profit in winter feeding—in some cases all—depends upon a proper selection of feeding stock, whether beeves, sheep, or pigs.

Sheep.—Now that we are shipping sheep and mutton to Europe, every farmer who can do so, should take a hand in the profits. In England, the farmers call their sheep "the rent payers," that is, they are expected to bring in from $10 to $20 per acre over the whole farm, or about what is paid for rent there. A good mutton sheep will sell for nearly $10, without counting the fleece; at this price it will pay to keep long-wool sheep as they ought to be kept. The strongest and most rapidly growing sheep are the best. Grade Cotswold sheep are the best for the ordinary farmer.

Selecting a Ram.—March is the best month for lambs to come, if very early ones can not be well attended to. For these, a ram should be selected now, one that is in his second year, not large-bodied, but one that is compact, well built, well formed, well wooled, and with a fine, well-shaped head, is to be preferred, even if he is only of medium size. At this age a Cotswold ram may weigh 120 to 200 lbs., one weighing 150 to 180 lbs. is well as regards weight. The lock of wool on the forehead of the Cotswold, is one test of pure blood.

Early Maturity is the chief point in breeding animals for market now, and the chief thing to calculate for, is to have stock that will make the most weight in the shortest time, and on the least food.

Swine.—With proper arrangements, sows may be bred whenever it is desirable to have the pigs. A sow should be a machine for producing pigs, and the more work in this way she is made to do, the more money is made. There may be two litters in the year. Spring pigs for the summer or fall market, and August pigs for the holidays.

Warm Pens.—By and by every good farmer will find fuel to be cheaper in the winter than food, and in a warm pen, pigs may be raised in the depth of winter. Those who can take care of pigs in February, may couple their sows now; others should avoid it. When a pig, of any good breed, can be made to weigh 300 lbs. in 10 or 12 months, there is loss in keeping any but breeding animals over that age.

Fattening Pigs should be pushed on as rapidly as possible before the cold weather. A pound of fat made now, costs less than that made next month, and that costs less than the same made in December. Remember that cold weather wastes fat.

Moderately Fat Animals are the most profitable. Every excessively fat animal has been fed at a loss during the latter part of its feeding. When an animal is ready for market, sell it; if there is feed left, buy some more lean animals and feed them. "The nimble sixpence" brings the profit.

Young Fall Pigs should have plenty of milk, and if the food is made "milk-warm," they will thrive the better for it. Small potatoes, boiled and mashed in skimmed milk, with a little bran, will make them grow rapidly. Feed a little at a time and often. The young pig's stomach is very small, and overfeeding causes indigestion, and prevents growth.

Stables and Pens should be made tight for the winter. Dry, tight floors, warm bedding, close doors and windows, and ventilation from the ceiling or over doors, are necessary to the comfort of animals.

Pure Water is a first requisite for man or beast. A good well, or cistern, provided with a Universal Force Pump, will be found one of the most profitable things in the barn-yard or house-yard.

Poultry.—Cull out undesirable fowls, and keep only good ones. Pure-bred fowls are as profitable, in their way, as other pure bred stock. Feed young pullets with boiled potatoes, mashed in the water they have been cooked in, and mixed, while hot, with corn-meal and cracked wheat. Feed this warm, and every week give some of the "Imperial Egg Food," with some of Bowker & Co's. meat and bone flour along with the food. This will give eggs all through the winter. The culled fowls may be cooped and fed on scalded skimmed milk, with corn and oatmeal, for three weeks, when they will be as fat as they can be made; to feed any longer is a waste of time and food. This food makes sweet and white flesh and fat. When fed for market, give only corn, which makes the yellow fat so much desired by the poultry dealers.

Sundry Matters.—Dry earth is the cleanest and most healthful litter for the poultry-house or pig pen. Where sand is plentiful, this is also clean and wholesome litter. Fine road dust is, perhaps, the most convenient shape in which to collect a quantity of dry earth for winter use. Ditch scrapings are also a good litter. Now is a very good time to procure these materials. Implements, tools, and machines may now be cleaned and stored away for the season. Drains should be looked to. Root-houses and cellars should be cleaned and made ready for the potatoes, turnips, etc. The half-yearly whitewashing should not be neglected. Roads should be put in order before the fall rains come. Paint wagons and putty the seams, before they become swollen by the rain. Everything that can be done now to prepare for winter will be seasonable work.

Notes on Orchard and Garden Work.

Ripeness is the characteristic of the month—ripeness in the orchard, as seen in the ruddy fruit, ripeness in the garden, where growth is well nigh over, and in the forest and lawn trees, the tints of gold and crimson indicate that the leaves are ripe, their work is done, and the season at an end. In our Northern States the signs that mark the season's close are more well defined and striking than in the milder ones, but even there they are more or less manifest, and over a wide extend of country this will be the harvest month, and the proper caring for the various crops will demand attention. In notes of this kind it is impossible to avoid repeating some of the essentials—for they are written mainly for novices. If we enjoin upon every cultivator, no matter whether his ground is measured by acres or by rods, to do everything this season that will save the doing of it next spring, it is none the less important because it has been said many times before, nor is there any probability that the necessity for it will be any less in the future. If one wishes to be driven with work next spring—so many things to do that he hardly knows which to do first; if he wishes a backward season, he can provide for it now. When the last cart-load or barrow-load has gone from the orchard or garden, let all lie as it is left, until next spring. If on the other hand he would have a successful season, let him begin his *spring* work now. Repair fences and gates, clear up rubbish and burn what is not to be saved; plow or spade and manure for early crops, are among the things that must be done either now or in the spring, but which may be much better done now. Those who have never tried it will be astonished at the difference it will make at the time when even with the best management spring work will be pressing.

Orchard and Nursery.

Some hints were given last month on page 342, which may be found useful. As a general thing the late keeping varieties of apples and pears may be left on the trees until there is danger from frosts.

Apples are nowhere, that we have seen, an abundant crop, and prices are likely to be such as will warrant care in picking and packing. We again insist upon a careful assorting of the fruit. In barreling, use a press of some kind—a simple lever, though slower than some of the presses or vices sold, is better than none. All fruit that is to be transported should be packed so solidly and pressed so firmly, that shaking and consequent bruising can not take place. Keep the fruit as cool as possible; it is better to place the barrels under a shed, and not take them to the cellar before quite cold weather.

Winter Pears need the same treatment as winter apples. The autumn pears have, with us, ripened much earlier than usual. Should this occur with the winter kinds, they will need watching.

Cider Making for vinegar may be carried on when most convenient, but if the product is to be used as cider, it should be done when the weather is cool and fermentation may go on slowly. Sound fruit, great cleanliness in the press and other utensils used, and gradual fermentation are essential in making good cider; the quality of the product will depend upon the richness of the apple juice.

Pomace is a waste product that many find it difficult to utilize. If there is a demand for apple seeds at a neighboring nursery, they may be washed from the fresh pomace; a box 8 or 10 ft long, half as wide, and 10 inches deep, is used; this is placed where a stream of water will continuously flow in at one end and out at the other, an inch lower. The pomace is beaten and broken up with forks, and the stream carries off the fragments while the heavier seeds sink to the bottom. It is only rarely that pomace can be used in this manner; it may be fed to pigs and to cattle in small quantities at a time; if put in the manure heap, it should be well broken up as it is very slow to decay.

Planting.—Wherever autumn is usually mild, and the soil in proper condition, planting at this season is advisable, but if winter sets in early after the first frosts, the locality is not favorable for autumn planting. There is usually more time to give to the work, and the soil still warm and in better condition for the roots than it ordinarily is in the spring. If trees are not to be set until spring, it is better to order them in the fall, that they may be at hand. They may be kept with as much safety as if they remained in the nursery if properly

Heeled-in.—A nurseryman's term for placing the trees in the ground temporarily. A trench is dug in a dry and sheltered place, and the trees are laid in it in a sloping position, filling in around the roots with fine, mellow soil, taking care to leave no spaces among them; the soil should be rounded up, and cover about half of the stems as well as the roots; there should be no straw put over, as this would shelter mice, and for this reason there should be no weeds or other litter near by.

Top-dressing with manure or compost may be done this month or later, the important point being to do it some time.

Seeds of Stone Fruits (often improperly called "pits,") the peach, cherry, and plum, must not be allowed to get too dry. Small lots are placed in boxes with alternate layers of moist sand, and kept in a cool place, even out of doors, if covered to keep out the rain, until spring. With large quantities, such as several bushels of peach stones, they are put upon the ground in alternate layers with earth, covering all with several inches of earth and leaving it exposed to the weather until spring.

Budded Stocks that were worked late should be looked to and the ties cut if the buds are all right.

Fruit Garden.

For the reasons mentioned under orchard, most small fruits may be set this season where the conditions are favorable. Some hints are given last month concerning planting.

Blackberries and Raspberries should be so securely tied to their stakes or trellises, that they will not be broken down by the snow. If tender raspberries are to be laid down, it should not be done until just before the ground freezes.

Currants and Gooseberries.—Prune as soon as the leaves fall, thinning the bushes where too thick, and shortening the new growth a half or a third its length. Make cuttings of the prunings of this season's growth, about 6 inches long, and set at once; cover the cutting bed with straw or leaves when cold weather sets in.

Strawberries.—In most northern localities it is too late for the plants to get well established, and it will be better to wait until early spring.

Grapes.—No questions concerning small fruits are more frequently asked than those about keeping grapes. Some varieties, such as the Concord, will not keep any length of time, no matter how much pains is taken, while the Catawba, Diana, Iona, Isabella, and others, keep for several months. If a grape is not of a keeping variety it is of no use to attempt it. At the vineyards fruit houses are built, usually with double walls, after the manner of a refrigerator, to keep a uniform temperature; these are well ventilated, and may be made dark. The grapes, thoroughly ripe, are picked with great care, and laid upon trays or drawers, which are arranged on racks in the fruit room. When sent to market towards the holidays, the bunches have all imperfect berries removed and are packed in boxes. Some expose the fruit in the trays for a week or so, or until the skin becomes toughened and it is then packed and kept in the boxes (3 or 5 lbs.), until sent to market. In either case the fruit is kept at a low and uniform temperature.

Grape Vines should always be pruned in the fall, as bad weather, or press of other work may interfere in early spring. As each vine will require to be pruned according to its condition, no general rules can be given. The canes that grew the past season, will not bear fruit again. The buds upon these canes will next spring form shoots upon which the fruit will be borne. The pruner should be able to see what the vine will be, to decide where he wishes fruit bearing shoots, and must leave buds to produce them, cutting away all the other buds, or the canes which bear them. As this will remove a large share of the wood that the vine has made during the past season, the novice is timid, and fears that he is doing wrong, but in most cases the danger is in leaving, rather than in removing, too much.

Kitchen and Market Garden.

If one is to commence a garden, this is a favorable month to begin operations. Such work as draining, leveling, and others in which soil is to be be moved, is more easily done than when the earth is heavy with moisture, as it is in spring. Land in sod, intended for a garden, may be broken up, first giving a good dressing of manure, and then turning over the sod with a shallow furrow. As fast as a portion of the garden is cleared of its crop, all rubbish should be removed and the piece plowed or spaded, with manure or without, according to its intended use....Stiff soils are wonderfully ameliorated by plowing and leaving them rough: the exposure to the weather during the winter, will make them, as an old gardening friend expresses it, "as soft as a silk glove."

Plants for Cold-Frames.—Cabbages, Cauliflowers, and Lettuce, the seeds of which were sown last month, are usually ready to be put into the frames in four weeks from the time of sowing. Each sash will hold about 500 cabbages and cauliflower plants, and about 800 of lettuce. Care should be taken to set the first two down to the leaves, as when a portion of the stem is exposed, it is apt to be injured by the freezing and thawing; if the weather is warm at the time, the plants may need shading for a few days, and if the soil is very dry, a slight watering may be required. The sashes are not put on until the approach of cold weather.

The Cold-Frames used by market gardeners, are rude affairs. Hemlock planks are nailed to posts to support them; the rear plank 12, and that at the front 8 inches high; the frame is wide enough for the length of the sash, and as long as is required by the number of sashes to be used; of course the ends are closed by pieces having the proper slope. Strips may be placed from front to rear for the sashes to slide upon, the ends of the strips having a "dove-tail," which fits into a corresponding notch in the edges of the plank. The frames should be in a sheltered place, and face the south or south-east. The soil should be rich, or made so, and worked fine and free from stones. The object of these frames is to keep the plants, which are almost hardy in the climate of New York, safely through the winter, and in a thoroughly dormant condition. They are not, as some suppose, for growing the plants, but on the contrary, great care is taken throughout the winter that they shall not start into growth; hence on all mild days the sashes are lifted at one end, or taken off altogether.

Preserving Roots.—Roots to be used for the table should not freeze, nor dry so as to shrivel—the latter being a quite common trouble; for family use, beets, carrots, parsnips, etc., are easily kept in boxes or barrels, in which is earth enough to cover them, and placed in the cellar. House cellars are apt to be too warm, and it is not desirable to have large quantities of vegetables stored in them, as the emanations from them, if no worse, are unpleasant. The use of earth avoids this difficulty in good measure. Still, it is better to keep only a moderate quantity, for immediate use, in the cellar, and put the bulk in the root-cellar, if there is one, or if not,

Store in Pits, as practised by the market gardeners. The pit, made where the water will run off, is 6 ft. deep and 3 or 4 ft. wide. A section of roots, 2 feet in length, is started in the pit; then 6 inches from that another section of roots, and so on, the spaces between the sections being filled with earth; this keeps them in small masses, and they are preserved in the most perfect manner. The pit is at first slightly covered with earth, but as cold weather comes on, earth is added to the depth of 2 feet, and well rounded off to shed rain. Of course the roots should not be dug and stored until the growing season is over, but it is well to be ready for them. Beets and carrots are injured by heavy frosts.

Celery not yet earthed up, should be attended to; first bring the leaves together, and draw the earth to them with the hand, to hold them in an upright position. A part for early use may be banked up with the spade, bringing the earth up nearly to the top, but that for the winter will blanch in the trenches, where it will be placed next month, and needs only enough earth to keep it upright.

Tomatoes are injured by a light frost. When danger is apprehended, the partly ripe ones may be gathered and the ripening finished in the sun, and thus prolong the season for a few days. Some pull up the vine and hang it up under cover for the same purpose. Secure the green tomatoes needed for pickles, before frost injures them.

Sweet Potatoes should be dug as soon as the leaves are injured; a dry and warm place is needed to keep them well.

Squashes will have their keeping injured if they are touched by frost. Handle carefully to avoid bruising. Use the least ripe first, and store the others where the temperature will be about 60°.

Spinach.—Keep clear of weeds, and thin as required for use, giving plants to be wintered more room.

Flower Garden and Lawn.

Many, as soon as the first frosts come, cease to take interest in the flower garden, and leave it without further care. Therein they make a mistake, as they deprive themselves of some weeks of enjoyment. Our climate at this season is in one respect very unsatisfactory—we speak now for the vicinity of New York City.—Late in September, or early in October we have frosts, not very heavy ones, but enough to demoralize the Coleuses and all such very tender things, while the plants that are a trifle more robust—even the Geraniums, are scarcely injured, and the hardy Chrysanthemums and other late bloomers do not mind it at all. After a few mornings of these early frosts, it often happens that there is a whole month of weather, which for real enjoyment of out-door life, is not equaled in the whole round of the year. Let the delicate things from the tropics go, there will be enough left, and these faithful friends that stay with us to the very last, should have all the more care. Besides, it is not flowers alone that make the garden enjoyable, there is the foliage, which the cool nights and heavy dews bring into the best possible condition, and as the trees and shrubs ripen up their leaves, one after another, a variety of tints are displayed, and in such profusion too that we can well spare the flowers.

Keeping—by which we mean care and neatness everywhere—should not be relaxed. If tender plants are touched by the frost, remove them at once. If a tree sheds its leaves early, sweep them up. If late blooming plants are past their prime, cut away the flower clusters, and keep all snug.

Chrysanthemums will be showing bloom. If those for flowering in the house were not taken up, as directed last month, lose no time in doing it. Tie up those that are to bloom in the borders.

Stakes and Strings will be needed now, not only for Chrysanthemums, but for Tuberoses, and other late blooming plants. A storm may come at any time, and all preparations should be made for it.

Dahlias are done for by the first frost. Cut away the stalks near the ground, and select a warm dry day to lift the roots. This should be done in the morning, letting them dry all day in the sun before putting them away. A cellar that will keep potatoes will answer for these. Be sure and so fasten the label that it will *stay*.

Tender Bulbs, such as Tiger Flowers, Gladiolus, Tuberoses, etc., are to be taken up after the early frosts, and kept in a dry place where they will not freeze. Tuberoses should be kept where they will not be in a less temperature than 50°.

Protecting from Early Frost.—If one has a showy bed, or single plants of the tender kind, they may be carried through the first frosts, by taking a little trouble, and their beauty be prolonged for several weeks. This may be done by means of a sheet, supported tent-fashion over the bed, or even a shelter of newspapers held up by sticks and strings for the few first frosty nights. We have in this way often prolonged the usefulness of a bed of

Cannas, which are very susceptible to frost. If the foliage is killed by a heavy frost, it is very difficult to keep the roots through the winter, and it is safest to be a little in advance of a killing frost, and cut them down. Ordinary cellars are too damp to keep the roots well; they do best in a dry and warm place, but must not be allowed to dry until they shrivel.

House Plants that have been plunged in the borders, and those that have been turned out, if they are to be saved, should be taken up before they are injured by cold nights.

Bulbs for Spring Blooming must be planted, and the earlier now, the better; give a rich bed, well fertilized with cow manure. The catalogues of the dealers give ample directions for planting.

Hardy Herbaceous Perennials, where the soil is still in good order, and the season favorable, may be divided and reset, as directed last month. This is the proper season to set out all of these that bloom in early spring.

Covering is necessary for plants of doubtful hardiness, and even the hardiest bloom all the better if covered for the winter. Nothing is better for this purpose than leaves, which may be kept in place by a moderate sprinkling of earth, or by brush and poles. Straw or litter of any kind that has no seeds of weeds, may be used for this purpose, but not until cold weather sets in.

Greenhouse and Window Plants.

The greenhouse should be ready to occupy whenever the weather makes it necessary to take the plants into it. Painting, glazing, new planks to the benches and walks if needed, and the repairs to the heating apparatus should be all done. Do not wait for threatened frost before removing tender plants, as the cool nights now are to be avoided.

Window Plants should not be taken at once from the open air to a close room, in which on cool nights a fire is required. It is better to place them in a room where there is no fire, and which can be freely opened during the day.

Bulbs for flowering in pots should be potted as soon as they can be procured. Give a rich soil, made open with sand, and after potting, place in a cool and dark cellar to form roots, or they may be put under a shed and covered with coal ashes.

Hardy Plants for Forcing are not so much used as they might be; many can be forced in window culture, though not so soon as in the greenhouse. Among those well suited to this use are *Dicentra*, (Bleeding Heart), Perennial Candytuft, *Astilbe*, (incorrectly *Spiraea*), *Japonica*, Lily of the Valley, among herbaceous plants, and of shrubs, Thunberg's Spiraea, and *Deutzia gracilis*, are among the best, and if one has thought to prepare small specimens for that purpose, Forsythia, Weigelas, and Lilacs may be used. All these should be taken up at once and potted, and kept in a pit or cellar until late in January or early February. When brought into the greenhouse or a sunny window, give water sparingly at first.

Supplies of all kinds should be in store and under cover. Soils, seed, pots, labels, moss, and whatever is likely to be needed are to be provided.

Seeds of Annuals may be sown; Candytuft, Sweet Alyssum, and Mignonette, are always in request for cut flowers, and the list can be enlarged at will.

Commercial Matters—Market Prices.

Gold has been up to 105¼, and down to 103¼, closing Sept. 12, at 103⅜, as against 105¼ on Aug. 11, 105⅜ on July 12; 104⅞ on June 12; 107¼ on May 12; 105⅞ on April 12; 104⅝ on March 12; 106 on January 12; 107¼ on Dec. 12, 1876, and 111½ on the 14th of August, 1876 ... Breadstuffs have been more active during the month, on home trade account, as also for shipment, and for forward delivery, largely for speculative purposes, and values—though fluctuating frequently—has been quoted stronger. The export inquiry has been especially brisk toward the close for shipping grades of Flour, desirable lots of Spring and Winter Wheat, the better qualities of Corn, and prime Rye, (the latter mainly for the Continent). Some export demand has also been noted for Oats, of which 15,000 bushels Western, averaging 35 lbs. to the bushel, were taken on Sept. 11th, at 37c. for shipment to Liverpool. In new crop Barley, some important transactions have been reported in No. 1 Canada, for October delivery, on the basis of $1.05@$1.07½ for strictly prime, with six-rowed State, late September and early October delivery, quoted at 83@85c. per bushel.... Provisions have been more freely dealt in, leaving off much more firmly....Cotton has been in fair request, and values have been generally well supported....The business in Hay, Hemp, and Hops, has been inactive, and depressed in price....Seeds have been more sought after, closing more steadily at our quotations. New crop Clover sold on Tuesday, Sep. 11, to arrive soon, at 10@10¼c., quoted for October delivery at 9¾@10c. ℔ ℔....Groceries have been in better demand, closing stronger in price....Tobacco has been of comparatively ready sale at full rates....Wool has been less active, and, as a rule, weaker in price. Manufacturers have been operating with reserve....Samples were exhibited at the Produce Exchange, on Tuesday, Sept. 11, of new crop Wheat, of the Silver Chaff variety, grown in Canada. One bushel, sown on one acre of land, to the west of Hamilton, was represented as having produced 61 bushels and 4 lbs. of wheat, of superior quality. A very handsome sample of Red Fife Wheat was also shown, grown north of Whitby, which Wheat, on eighty acres of land, had yielded over forty bushels to the acre....Ocean freights have been quite active, and higher for Grain, though closing rather less firmly ...Grain rates by steam to Liverpool closed on the 12th of Sept. at 10@10½*d.*; to Glasgow at 9*d.*; to London at 11*d.*; to Liverpool, by sail, 9¼*d.*; London, by sail, 9½*d.*, per bushel. Provisions by steam to Liverpool, 50*s.* @100*s.* (the latter for Butter in refrigerators) per ton; Cotton by sail and steam at ¼*d.* ℔ ℔. Grain, by sail, for Cork and orders, at 7*s.*@7*s.* 3*d.* and to Continental ports, 6*s.* 10½*d.*@7*s.* 3*d.*; Italian ports, 6*s.* 7½*d.* @ 6*s.* 9*d.* per quarter.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Sept. 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	315,000	8,104,000	3,763,000	201,000	107,000	1,214,000
27 d's *last* m'th	221,000	2,476,000	2,931,000	67,000	206,000	1,042,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	369,000	5,476,000	5,649,000	374,000	91,000	1,349,000
27 d's *last* m'th	383,000	2,906,000	6,113,000	357,000	168,000	1,206,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877..	315,000	8,104,000	3,763,000	201,000	107,000	1,214,000
25 days 1876..	294,000	1,617,000	4,117,100	221,000	31,000	693,000

SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1877..	369,000	5,476,000	5,649,000	374,000	91,000	1,349,000
25 days 1876..	431,000	2,302,000	3,349,000	253,000	16,500	1,214,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Sept 10, 1877..	247,808	2,049,885	87,201	24,409	723,478	359,181
Aug. 6, 1877..	162,325	320,094	22,615	11,595	576,090	252,869
May 7, 1877..	761,686	468,809	193,046	174,375	347,881	291,654
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,800	307,438

4. *Exports from New York. Jan. 1, to Sept. 12.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1877.	831,577	6,927,843	16,381,818	1,184,554	771,655	111,666	180,776
1876.	1,337,000	18,679,000	11,377,000	682,000	28,100	453,260	460,200
1875.	1,282,727	18,140,047	8,387,632	152,333	225	88,472	235,865
1874.	1,529,415	24,462,895	15,829,600	553,050	3,320	86,896	272,105
1873.	966,067	12,166,224	9,813,745	551,093	19,226	26,591	91,270

5. *Tide-water Receipts at Albany, from opening of navigation to Sept. 8th:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1877..	6,500	2,148,900	14,182,600	393,600	434,800	1,188,200	437,900
1876..	16,400	7,978,200	4,879,400	343,600	122,500	2,125,700	469,700
1875..	54,800	11,262,200	3,693,700	83,500	32,900	1,155,600	532,100

CURRENT WHOLESALE PRICES.

	Aug. 13.	Sept. 12.
PRICE OF GOLD	105 1-4	103 3-8
FLOUR—Super to Extra State	$4 65 @ 6 40	$4 85 @ 6 35
Super to Extra Southern....	4 75 @ 9 50	4 90 @ 8 75
Extra Western	5 50 @ 9 50	5 60 @10 00
Extra Genesee	6 00 @ 8 25	6 25 @ 7 75
Superfine Western	4 65 @ 5 35	4 85 @ 5 50
RYE FLOUR	4 00 @ 5 10	3 75 @ 4 75
CORN-MEAL	2 85 @ 3 50	2 65 @ 3 50
WHEAT—All kinds of White.	1 40 @ 1 60	1 38 @ 1 58
All kinds of Red and Amber.	1 00 @ 1 55	1 10 @ 1 48
CORN—Yellow	61 @ 63	59 @ 62
Mixed	54 @ 60½	53 @ 59½
White	62 @ 70	60 @ 65
OATS—Western	27 @ 48	31 @ 44
State	45 @ 55	35 @ 44
RYE	65 @ 87	68 @ 85
BARLEY	50 @ 90	70 @ 1 05
BARLEY MALT	75 @ 1 35	75 @ 1 30
HAY—Bale, ℔ 100 ℔s.	60 @ 1 00	60 @ 95
STRAW, ℔ 100 ℔s.	30 @ 70	40 @ 65
COTTON—Middlings. ℔ ℔	11½@ 11⅝	11⅛@ 11⅜
HOPS—Crop of 1877, ℔ ℔	— @ —	10 @ 15
" old, ℔ ℔	2 @ 9	2 @ 9
FEATHERS—Live Geese, ℔ ℔	35 @ 45	38 @ 48
SEED—Clover, ℔ ℔	Nominal.	9¾@ 10¼
Timothy, ℔ bushel	1 75 @ 1 90	1 50 @ 1 55
Flax, ℔ bushel	1 50 @ —	1 50 @ —
SUGAR—Refi'g & Grocery ℔ ℔	7¾@ 9¾	7¼@ 9⅝
MOLASSES, Cuba, ℔ gal. 50 test	35 @ —	33 @ —
New Orleans, new crop, ℔ gal	40 @ 55	37 @ 50
COFFEE—Rio (Gold)	16¾@ 20¾	16½@ 20¾
TOBACCO, Kentucky, &c., ℔ ℔.	4 @ 17	5 @ 15
Seed Leaf, ℔ ℔	4½@ 50	4½@ 50
WOOL—Domestic Fleece, ℔ ℔	35 @ 55	28 @ 53
Domestic, pulled, ℔ ℔	22 @ 42	30 @ 37½
California, spring clip,	13 @ 32	13 @ 30
California fall clip	10 @ 25	10 @ 23
TALLOW, ℔ ℔	8 @ 8¼	8 @ 8¼
OIL-CAKE—℔ ton	35 00 @35 50	33 50 @ —
PORK—Mess, ℔ barrel	13 90 @14 00	13 40 @13 50
Extra Prime, ℔ barrel	9 00 @10 75	10 00 @10 50
BEEF—Plain mess	11 00 @12 00	Nominal.
LARD, in trcs. & bbls, ℔ 100 ℔	7 37½@ 9 75	7 50 @10 00
BUTTER—State, ℔ ℔	14 @ 27	14 @ 27
Western, poor to fancy, ℔ ℔.	11 @ 26	12 @ 27
CHEESE	3 @ 10¼	5 @ 13¼
BEANS—℔ bushel	2 30 @ 3 60	2 00 @ 3 50
PEAS—Canada, in bond, ℔ bu.	83 @ 85	— @ —
new, ℔ bush	— @ —	— @ 1 50
EGGS—Fresh, ℔ dozen	14 @ 18	18 @ 21
POULTRY—Fowls & Chickens	10 @ 15	11 @ 17
Turkeys—℔ ℔	12 @ 16	13 @ 20
Geese, ℔ pair	1 25 @ 1 50	1 50 @ 2 00
Ducks, ℔ pair	50 @ 1 00	50 @ 1 00
Roosters, ℔ ℔	6 @ 8	8 @ 12
DUCKS, Wild, ℔ pair	— @ —	25 @ 60
GROUSE, ℔ pair	— @ —	75 @ 80
PARTRIDGE, ℔ pair	— @ —	75 @ 1 00
PLOVER, ℔ doz	— @ —	1 37 @ 1 62½
SNIPE, per doz	— @ —	40 @ 1 50
WOODCOCK, ℔ pair	— @ —	90 @ 1 15
TURNIPS ℔ bbl	40 @ 50	40 @ 50
" ℔ 100 bunches	1 00 @ 1 37	1 50 @ 2 50
CABBAGES—℔ 100	1 12½@ 3 50	1 00 @ 2 50
ONIONS—new, ℔ bbl	1 50 @ 2 50	1 00 @ 2 25
LETTUCE, ℔ bbl	37 @ 60	37 @ 50
CARROTS, ℔ 100 bunches	— @ —	1 00 @ 1 25
POTATOES—new, ℔ bbl	1 09 @ 1 50	1 00 @ 1 75
SWEET POTATOES—℔ bbl	— @ —	2 75 @ 3 50
TOMATOES, new, per box	25 @ 40	20 @ 25
BEETS, ℔ 100 bunches	1 00 @ 1 50	1 00 @ 1 25
STRING BEANS, ℔ bag	50 @ 62½	25 @ 50
CUCUMBERS, ℔ bbl	40 @ 65	— @ —
BROOM-CORN	4 @ 8	4 @ 9
GREEN CORN, ℔ 100	30 @ 60	40 @ 50
EGG PLANTS, ℔ doz	— @ —	25 @ —
PEPPERS, ℔ bbl	— @ —	1 00 @ 1 50
APPLES—℔ barrel	1 50 @ 3 50	1 50 @ 2 75
SQUASH, ℔ bbl	50 @ 1 00	50 @ 75
PEANUTS, domestic, ℔ bush..	— @ —	1 20 @ 1 50
Melons, per 100	8 00 @25 00	5 00 @20 00
GRAPES, ℔ ℔	— @ —	2 @ 11
PEARS, ℔ bbl	1 50 @ 4 50	1 50 @ 3 00
PEACHES, ℔ basket	40 @ 3 50	50 @ 1 75
PLUMS, ℔ bbl	— @ —	3 00 @ 9 00

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Aug. 20	9,734	67	3,588	25,105	21,563
Aug. 27	8,870	54	3,963	21,008	18,611
Sept. 3	9,012	98	8,017	24,308	19,513
Sept. 10	10,292	97	2,987	34,341	19,409
Sept. 17	12,097	87	2,475	33,950	21,170
Total for 5 Weeks	50,005	403	16,030	138,712	100,266
do. *for prev. 4 Weeks*	35,671	244	14,250	92,721	62,691

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	10,001	80	3,206	27,742	20,051
do. do. *last Month*	8,908	61	3,562	23,178	15,698
do. do. *prev's Month*	10,118	78	4,329	24,024	20,413

Beeves.—The foreign shipments of beeves has again drawn considerably from supplies, 3,328 having been taken the past month from this market. Notwithstanding this, prices have, however, gained nothing permanently, spurting and falling back again. At the close, many cattle were kept back rather than prices should give way, and there was a loss of a ¼c. ℔ ℔., only on very large receipts and a very heavy market, with a poor promise ahead. Fat and extra beeves brought 12 @ 12½c. for 57 to 58 ℔s.; native steers sold for 9¾ @ 11c., and Texans and Colorados 7½c. for 54 ℔s., to 8¾c. for 55 ℔s., estimated.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Aug. 20	7½@13 c.	9 @11½c.	9½c.
Aug. 27	7¾@12½c.	8 @12 c.	9½c.
Sept. 3	8½@12½c.	9½@11½c.	10 c.
Sept. 10	8¾@12½c.	10 @11¼c.	9⅝c.
Sept. 17	7½@12½c.	8¾@11 c.	9½c.

Cows have been too plentiful, and poor cows have dragged heavily, from $40 for poor, to $70 per head for prime. Good cows are readily taken... **Calves.**—These are getting less in numbers and keep up in value. Grass calves are called for by farmers at 3c. ℔ ℔., live weight. Fat veals bring 6 @ 8c., and extra 8¼c. ℔ ℔., alive.... **Sheep and Lambs.**—The business has been very irregular, closing better with good demand for fat wethers. Lambs are dull and weak, selling at 6¼ @ 6½c. ℔ ℔., for the best, and 4½ for poor. Sheep sold for 6¼ for prime, and 4¼ @ 4½ for thin.....**Swine.**—The weather has had a depressing effect on hogs. Dressed have been alternately weak and firm, closing at 7 @ 7½c. for heavy, and 8½ @ 8¾c. for light pigs; a lot of 208 ℔. live hogs brought 5¾c. ℔ ℔.

Prices of Feed.

Bran, per ton	$18.00@ $20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per ℔	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton..	$56.50
do. do. Lobos, do. do. do.....	47.50
do. do. guaranteed, ℔ ton, cargo C	56.00
do. do. rectified, per ton, 10 p. c..	66.50
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Wheat and Grass Manure, ℔ 1,000 ℔s.,	27.00
do. Tobacco do. do.	24.67
do. Turnip do. do.	19.36
do. Bone, strictly pure, fine........ ...per ton.	40.00
do. do. do. medium do.	37.00
do. do. do. coarse do.	35.00
" Dissolved Bone, 15 per cent........ do	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.00
" " Dry g'd Fish Guano, ton 9 p.c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
" Rye do do do	11.00
" Wheat do do do	16.00
Bowker's Hill and Drill Fertilizer, per ton........	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton..........	7.00@8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (actual potash 44 per cent) per lb....	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$20.00
Muriate of Potash (actual potash 50 per cent), per lb...	2½c.
Nitrate of Soda, per lb..............	4½c.@ 5 c.
Sulphate of Ammonia (25 per cent.), per lb....	4¼c.@ 4½c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$50

Shipping Pigs to England.—The tide which has so long flowed westward, is now turning the other way, and we are beginning to export improved live stock to England. Cattle have been sent thither for some time past, and now our popular pigs are following them. Three Poland China pigs were recently shipped to Liverpool from the herd of D. M. Magie, of Oxford, Ohio. We have no doubt that this excellent breed of pigs will be appreciated in England, as they possess every qualification that can ensure popularity.

Developing the Draft Horse.—"R. A.," Tazewell Co., Ill., writes as follows in regard to a better mode of developing the draft horse: "Activity and strength are the two things needful in the draft horse. These qualities are well developed separately in the thoroughbred and in the heavy Norman. How can we unite them? Crossing may help. But the surest way is that by which trotting horses have been developed to perform such wonderful feats as they do; that is, by the severe trial of the course. Let fairs, instead of showing draft horses as beef cattle are exhibited—fattened, as though for the butcher, with coats unused to the sun—institute a system of trials and give the sweepstakes premium to the horse that can haul the heaviest load, a given distance, in the quickest time. Hundreds of breeding stallions are never broken to the harness. How, then, can we judge what they are? The most active and spirited, out of harness, do not always prove to be so when put to the test of hard work. Neither is the shape or form a true index of strength. Yet it is almost universally the case that the breeder of draft horses, especially if he owns no stallion, makes his selection entirely by sight, and not by results of trials of strength and endurance. If writers and breeders will put much more stress upon this feature of breeding, will not their aim be secured with much more certainty?"

Special Notes....to....Every Reader.

I.—We invite *every* Reader of this Journal to turn to and carefully read through the descriptions of the useful and ornamental articles on page 401 to 408 inclusive. Every article has been canvassed with care, during months past. *Every article is a really good one, from trustworthy, reliable parties.* Anything not of first quality and just as represented, will be made so by the Publishers of this Journal. Every reader will be likely to find there something that will exactly meet a present want. The prices given are the regular selling prices.

II.—While many will desire to *purchase* through us some articles described, many others will feel that, however desirable a particular article may be, they must do without it this year. Every *such* reader will find an opportunity given to get one or more of these things **without money cost,** and very speedily. There are very few places where there are not three, four, five, and from that up to twenty, thirty, fifty or more, who would *be benefited by reading this Journal for a year.* Many of these would take it if some one acquainted with it would show them a copy, explain what it is, and receive their names and subscriptions and forward them to the Publishers. It would be a favor to them to do so, and usually before the year is out they would thank any one for having done so.

III.—Can not the Reader of this do so? More than **Eighteen Thousand** others have done this, and what so many have done, others may do. It requires no great tact for one who knows what this paper is to tell others about it, and offer to send on their names.

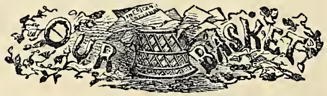
IV.—NOW is a good time to do this. The Publishers offer, to each new subscriber received hereafter, to send the paper from the receipt of his subscription to the **end of 1878** for a single subscription rate. This will be a help to any one in making up a small or large club which will secure him or her, *free*, one or more of the articles described on pages 401—408. *All* New Subscribers coming now for 1878, whether in premium clubs or otherwise, get the paper for the rest of this year without charge.

V.—WHY we pay these Premiums. It is so much trouble for some persons to write that, on this account, they often neglect sending for what they desire. Again, there are multitudes who do not know fully about the paper. It is a great convenience both to such people and to the publishers to have one or more persons at every Post Office who will give a little attention to the interests of this paper, let others know about it, and receive and forward subscriptions. But it would be an endless task to have a special agent at the multitude of Post Offices. To avoid all this, the publishers select an assortment of first-rate articles as presents or premiums to be **given** to those who take any trouble to show the paper and receive and forward subscriptions, new and old. These premium offers are open to all alike. *The paper is fully worth all that is asked for it. These articles are only offered for assistance rendered to the publishers.*

VI.—How can the Premiums be Afforded?—First, every dollar received from subscribers is expended upon the paper—upon its quality engravings, getting information, etc., etc. When more comes in from subscribers, more is expended upon the paper. BUT the publishers receive considerable income from good Advertisers, and all the premiums are paid for out of *such* receipts. More subscribers make the advertising pages more valuable, and supply more funds to pay for premiums. **Again.**—The premium articles are purchased at the lowest cash wholesale rates, and while *they are just as good as so much money to those who receive them,* the publishers are able to give really much more in the form of these premiums than if they paid cash commissions. Many persons who need money, get these articles by gathering subscribers and then sell the articles at full price. (A good many persons do this as a regular business, and thus get a good income.)

General Invitation.

VII.—*We invite every reader to favor himself or herself, and the publishers, by making up a small or large list of names* AT ONCE, *and select such articles as may be most desirable. It is an honorable enterprise, and also useful to others. All the Premiums are ready for prompt delivery, as soon as called for.* ☞ *Get some article* NOW, *for immediate use, and then try for another list to secure some valuable present to others at the Holidays. The extra copies offered* FREE *to subscribers, will help in procuring a premium club easily* NOW.



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time at the club rates, if new members begin at same date as original club.

FIFTY-TWO PAGES!—Interesting Figures.—To make room for the October descriptive articles and business announcements, without curtailing the reading columns, the Publishers order 8 extra pages, or **52** in all, making this the largest regular number of this paper ever issued. Printer's work is almost always paid for "by the piece," that is so much per "1,000 ems," varying from 25 to 50 cents per 1.000 in different places. An "em," or m, is a square of type of a particular size, not of the letter m, and is used to measure type just as a foot square is used in board measuring. As most letters are smaller than m, and many pieces of thin spacing are required, "1,000 ems" means nearly 3,000 pieces of type, which the printer "distributes" in the case and picks up and arranges in words, to set 1.000 ems. His right hand must therefore move back and forth some 6.000 times to set 1,000 ems, or 60,000 times if he set 10.000 ems in a day of 10 hours, as many do, (18,000 have been set in one day by one man). Our printers report 555.000 ems, (about 1½ millions pieces of type), used on the 51 pages of this paper (omitting the title page). An ordinary $1.50 book of 250 pages contains 275,000 ems of type (long primer). This one paper therefore contains as much type (or words) as *two* such books costing $3.00. As all the pages contain useful information, the reader will be likely to get his money's worth, the paper being sent post paid to regular subscribers for 13 cents per number, and much less to large clubs.

One Good Evidence of Reviving Business is seen in the increased new space called for in our advertising columns—nearly double what it was in October 1876.—The advertisements are so varied that one can hardly fail to get some useful information, some business hint, that will pay for reading all these pages carefully. To all, and especially to new readers, we desire to say that the rules of the Publishers shut out all patent medicines, all secret nostrums, all deceptive notices, and aim to admit *only* those advertisers who *have* the ABILITY *and the* INTENTION *to do just what their advertisements promise.* This cuts off a large income from those who, giving little if any return for much money, can and do afford to pay largely for advertising; but it is the only correct rule for those who would not be a party to fraud upon their readers.—And as our good advertisers come in under such strict rules, it will be pleasing to them and perhaps useful to their customers, if every one writing to them for circulars, for information, and to order from them, will mention that they found their advertisement in this journal.

Hints to Boys and Girls—to **Clergymen**—to **Churches**—to **Farmers**—to **Farmers' Clubs**—to **Ladies**—to **Merchants**—to **Railroad Conductors, etc., etc.,** will be found on page 399.

TWO MONTHS FREE.

Every New Subscriber for 1878 sent in during October will receive the paper the remaining two months of this year without charge. This applies to ALL subscribers, whether coming singly at single rates, or in clubs at club rates, or in premium clubs.

Notices of Catalogues, of Books, of the Reports of various societies, the acknowledgment of many complimentary tickets to fairs, List of the October Fairs, and other matters prepared for this number must be omitted, on account of the great pressure on our columns. The favors referred to are not the less appreciated because they are not specified, and the acknowledgment of many of them will be made another month.

The October Fairs.—We have usually given a separate list of the fairs to be held this month, but cannot do so this time, and reference must be made to the September list for these fairs.

Farmers Swindled in Cabbage Seed.—Mr. Peter Henderson sends an article which we regret that, in the crowded state of our columns, we can not give entire. We must now present merely an outline, or leave it until another month. According to an article in the "Brooklyn Eagle" of Aug. 25th, there visited the L. I. cabbage growers, last winter, a man claiming that his name was Seymour, and that he had the best cabbage seed grown in the State of Connecticut; it was the same seed that seedsmen sold for $10 the lb., but he offered it at $5. His operations extended from one end of the island to the other. Some farmers bought from one up to 20 lbs., paying full price; from the more timid Seymour took $1 per lb. down, the remaining $4 to be paid when the crop was harvested. The early crop turns out to be nearly worthless, and the late crop promises to be worse—and numerous farmers, who with the hope of saving something, bought this seed, have lost their whole crop. It seems strange that a cultivator, who knows the importance of good seed, especially in the cabbage and its relatives, should run the risk of purchasing from an unknown stranger; but when money is scarce with a farmer, a glib-tongued swindler, who offers to save him half his outlay, is readily listened to. Besides the offer to take $1 down and the rest in the fall, went far to allay any doubts of the vender's honesty—the victims not knowing that he sold, even then, at a profit, as something that will pass for cabbage seed, may be *imported* for 25c. per lb. It is a hard school to learn in, but we do not think that itinerant seed-venders will do a large business on Long Island for some years to come. Mr. Henderson thinks, that, as some of the plants have grown 3 to 4 feet high, and many of them flowered, the seeds may have been of the variety of non-heading cabbage known as "Southern Collard."

The American Pomological Society held its 16th biennial meeting at Baltimore on Sept. 12th to 14th, too late for us to do more than to mention the fact, that the meeting, while an exceedingly pleasant one, was attended by fewer members than usual, and to express our great regret, and that of every other member, that the President, Col. Marshall P. Wilder, was by a sudden ill turn, prevented from being present. The exhibition of the Maryland Horticultural Society, held at the same time, was notably fine, and the Maryland horticulturists deserve abundant credit for their efforts in various directions to make the meeting a success. The next meeting, in 1879, will be held at Nashville, Tenn.

The Names of Fruits.—Sometimes, in order to make an article fit a given space, we are obliged to add to or shorten it. In the article on Raspberries, we abruptly stopped after entering a protest against the name of Mr. Roe's promising new berry, the "Pride of the Hudson." We do not single out this variety for criticism in this respect, and only referred to it because it was new. In our opinion, the name of a fruit should never be of more than one word, and that word should not have more than two syllables if it can be avoided. No dealer says "King of Tompkins County," but calls the apple "King." "Duchesse d' Angouleme," and "Triomphe de Gand," are by common consent "Duchess" and "Triumph," and Mr. Roe's berry, if it attains the popularity hoped for it, will be either "Pride" or "Hudson." Life is too short, and dealers' time is too valuable for them to spend a large share of it in saying "Pride of the Hudson." It starts in the world weighted with just four times as much name as it ought to carry. had it been called "Roe," it would have been well. Why not call it "Pride of Cornwall-on-the-Hudson, Orange County, N. Y.," just for short?

A Hole in a Sauce Pan, or other article of tinware, is a small thing, but it causes great annoyance. Those who will take the trouble to learn, can easily do small jobs at soldering, but many have not the needed gumption, and spoil the job. These, and indeed all others, will find the "Magical Patching Plate" a great convenience. It is a thin sheet of solder prepared for the purpose, from which a bit is to be cut out large enough to well cover the hole; the surface of the ware being scraped bright, the patch is put on, a poker or other hot iron held upon it, and as soon as the solder melts the job is done. Our neighbors, M. D. Tracy & Co., are headquarters for "tinkering made easy."

The Sanitary Condition of City and Country Dwelling Houses, is the title of a little work by Col. Geo. E. Waring, Jr., and published as No. 31 of Van Nostrand's Science Series. It contains two papers read by the author before meetings of Public Health Associations, and correspondence suggested by these articles, and presents in a compact form the principles which must be observed in carrying off the waste matters from all houses. The proper disposal of house waste is as necessary on a farm as in a city, and it should be done with a view to the health as well as the comfort of the family. Sent from this office by mail for 50 cents.

The Prickly Comfrey was quite widely distributed last spring, and a fair estimate may be made of its value, though final conclusions can not be reached until another fall, as the sets sent out were very small, and the plant has now only fairly established itself. Next year it will start off in the spring from large and strong roots, and should furnish a much greater amount of foliage. Mr. W. Sweet, Washington Co., N. Y., gives an account of his trial; he had small sets, which he put out late in May; August 23rd he found it to average 114 leaves to the plant. At first his cows declined to eat it, but they soon took it greedily, as did the pigs. Thus far Mr. S. is pleased with it; he thinks instead of 3 × 3 ft., as advised, the plants should be set at least 4 × 4 feet.

Scrap-Bookery and Pottery.—We had no idea until we examined the stock of Oscar W. Young, Brooklyn, E. D., of the extent of the business of importing what are known as "Scrap Pictures," for the ornamentation of scrap books, jars, and other pottery, including "ginger-pots." The variety of subjects is immense, from minute insects and leaves, up to groups of figures, gorgeous clusters of flowers, and birds of the gayest plumage. In excellence of design and execution, in brilliancy and variety of colors, with gold and silver, these are simply wonderful. and their production must employ a large number of skilled artists and mechanics.

Treatment of a Self-Sucking Cow.—"B W. B.," Saratoga. N. Y. If the bit described in the *American Agriculturist* (Nov., 1876) is not effective, we would suggest making a larger one Try a piece of elder wood with the pith punched out, and an inch or more thick. Increase the thickness until it is found to suit. When the proper size is found, then make one of iron. The half-inch size is quite effective with calves, but very likely may not be with a full grown cow.

Wanted an Owner for one tin box of live caterpillars; one butterfly, very dead and much smashed; one paper box containing what was a bunch of grapes, fruit mostly fallen, very foxy, and never can be worth growing; one apple by mail, which is now quite decayed; a piece of pine with a hole plugged with cork, may contain insects, and may not; one lot of grass, sent in a roll of stiff paper open at the ends, probably not so much as when it was started, as there is but a fragment. Probably we could find other things to increase the list of articles now at hand, and to which we have not the least clue as to who sent them, or what they were sent for. In some weeks we shall perhaps get a letter or post-card stating, "some time ago I sent you, so and so, but I have had no reply, etc." If our friends will mail the letter or post-card asking about, or referring to articles sent by mail, with the articles themselves, or *before*, rather than later, it will save them from disappointment and us from no little inconvenience.

A Concrete Manure Pit.—"A. B. S.," Bucks Co., Pa. There can be no better material for the wall or bottom of a manure pit than concrete, made of one part of cement (hydraulic lime) and two parts of coarse sand; this may be used with twice its bulk of small broken stone, or large stones may be built up in a wall with the cement used in place of mortar. The floor may be three inches thick; a wall six feet high should be two feet thick at the bottom, tapering to sixteen inches or one foot at the top, according to the goodness of the sand and stone used. A wall of round stones should be thicker than one of broken stone with square or sharp edges. The cost of cement building is usually but a little more than that of ordinary lime work, but it depends on the cost of the materials in the locality.

Bean for a Name.—D. H. Stuart, Va., sends leaf, flowers, and pod of a bean; the flowers are pink, and the unripe pod is almost a foot long and over an inch wide. The plant is *Canavalia obtusifolia*, and native of, or naturalized, in most warm countries all over the world. It is abundant in the West Indies, and grows wild in some parts of Southern Florida. Another species, *C. gladiata*, is said to be held in great dread by the blacks in Jamaica; they call it the "Overlook," and have a superstitious belief that it can in some manner bring evildoers to punishment, and the whites take advantage of this notion, and plant this bean around their gardens, etc., to protect them from thieves.

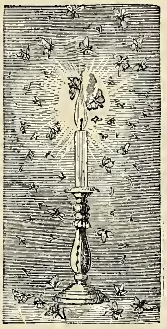
The Copper Strip Cutter.—The feed cutter referred to in the *American Agriculturist* for September as the Copper Strip Feed Cutter, made by the Belcher and Taylor Co., of Chicopee Falls, Mass., we understand is not intended to be known as "The Copper Strip" cutter. The "copper strip" cutter is made by the New York Plow Company of Beekman St., N. Y. We do not understand the precise relationship of the different manufacturers to the Copper Strip Cutter, but we are requested to state that this machine is made by and can be procured of the N. Y. Plow Company.

How to Use Poultry Manure.—"C. S.," Lewiston, Me. It is preferable to mix poultry manure with earth. If a quantity of weeds, leaf mold, and earth from woods or swamps, could be procured, these should be mixed in the heap in thin layers. The whole will ferment, and make an excellent manure, which may be used in the hill for cabbage, corn, or potatoes.

Potash for Wheat.—"J. F. H.," Harrison Co., Ind. The cheapest source of potash is the high grade or 80 per cent muriate. This is equal to 50 per cent of actual potash, and as it costs 3 cents a pound in small quantities, or 2¼ cents by the ton, it is equal to potash at double that cost, which is less than it can be bought in any other shape. A very instructive pamphlet on chemical fertilizers can be had free of cost from the Mapes Formula Co., 158 Front st., New York.

Canning Tomatoes.—Last month we requested any one who had successfully preserved tomatoes in ordinary fruit jars, to give their method. Several have complied with the request, and as many accounts are almost identical; the following from "L. P. J.," Atlanta, Ga., is selected it being the most detailed. She says: "Select ripe tomatoes, scald and skin them; place in a kettle, and allow them to cook for a few minutes, adding a little salt. Have the jars already heated, (by placing near the fire. or by the use of hot water), and fill them with the cooked tomato. Before putting on the rubber ring and cover, be sure and wipe the neck of the jar, so that there may be no seeds left to make an air passage. Screw down the tops, and after 15 or 20 minutes tighten again. I have put them up in this manner for ten years, and have never lost a jar, except when I have used old rubbers, which should be scrupulously avoided."...."A. R.," Grandview, Iowa, gives almost exactly the same directions, also cautioning against the use of imperfect rubbers, and advising a second tightening, but she further suggests wrapping the jars, when cool, in some thick paper, to exclude the light, and to keep them in a box in the cellar... ANOTHER METHOD is given by Mrs. H. P. Sexton, Hampden Co., Mass. "The tomatoes being skinned, they are cut into pieces about two-thirds the size of an egg; the jars being filled with these pieces, the cover is screwed on lightly, and the jars are placed in a wash-boiler, which has a coarse wire screen to prevent them from touching the bottom. [A wooden lattice work will answer. ED.] The water is luke-warm, and reaches to two-thirds the hight of the cans. The cover being put on the boiler, it is set over a good fire, and when the water commences to boil, the time is noted, and the boiling is continued briskly for 30 minutes. At the end of this time take out the cans, by the aid of towels, place them on a table, (but not exposed to currents of air, or the jars may break), then remove the covers a couple of minutes to let the steam escape. As the fruit settles, I take one jar and fill up the rest from the contents of this, and then seal up quickly. I put nine jars into the boiler to cook, and use one of these to fill the spaces in the rest, making eight cans out of nine."

Sundry Humbugs.



As the seasons change the aspects of nature, so do they affect the aspects of humbuggery. For months we have heard nothing of that very big bug that has its home in Wall St. As cool days and cooler nights send city people home from the seashore, so do they give country people more time for reading, and the Wall Street Humbug is ready with his little advertisement and his little pamphlet. His advertisement is usually very brief, just enough to excite curiosity. It is in substance: "Do you wish to make money? If so, send for my circular."—The farmer "out West" or "down East," sends for this circular or pamphlet. It shows him, as plain as printing can make it, how he can make money "hand over fist." Examples are given, in which tens have rapidly turned into hundreds, or hundreds into thousands. All the farmer has to do is to send the advertiser his money, and the advertiser understands all about "special privileges," and lots of street slang that the farmer never heard of before, or he has a plan by which, with a "combination of capital," he is going to do big things. The farmer is tempted; why should his money bring him in only six per cent, when others turn over dollar for dollar in a few days—and keep on doing it—it they will only put their money in the hands of these advertisers. Still, the farmer has earned his money by hard work, and a little at a time. He would like to double it, he don't care how many times, but—not feeling quite sure as to the character of those who propose to make him suddenly rich, he writes to the *American Agriculturist* about it, and perhaps sends the documents and asks advice. We apply to the record, which includes all the names of men who are regarded as doing business at all, and find that the advertiser, who promises to make others rich, is not down as good or bad—in fact, is not known among business men. We know a Wall St. broker who does a regular business in the street, and on application to him, we learn that the advertiser who promises to make others rich, is not known at the Board of Brokers, and quite unknown by name even, among those who do business there. We bethink ourselves of one who has retired from business, but who is widely known for his shrewdness, one who has made enough money to be able to carry on a farm for his own amusement—and one must be pretty well off to do that. We show him the advertisement and documents. His reply is, "Tell your people to let it alone." Now if we were to write a page, it would only mean "let it alone." Still, there will be some who can not resist the temptation, and these had already made up their minds to try their chances before they asked us for advice. Our readers may be very sure that those who advertise in country papers for $10 to $100, with which to "operate," or seek one dollar subscriptions to some "combination of capital," stand in, much the same relation to the regular Wall St. brokers, that the fly in the fable did to the cart wheel. Whenever temptation comes in this form, remember the retired Wall Street operator's advice "TO LET IT ALONE."…. Last month we gave an account of the ways and doings of that "Finance Committee" of that

"LOUISVILLE LOTTERY ASSOCIATION."

Circulars still go forth to inform people that they have drawn a "gold watch and chain valued at $150—which can be had by paying the assessment of ten per cent." We think business must be slack, as last month we received several letters of inquiry with every mail, while of late they have not averaged more than one or two a day. The correspondence concerning this matter is very amusing; while, we are happy to say, that the majority of those who send us circulars either indignantly deny that they ever had any part or lot in the Louisville or any other lottery, or make fun of the whole thing, others make a really serious matter of it, and evidently think that a stroke of luck has befallen them, and actually suppose that there is some one who will give them $150 worth of watch for $15. We fear that all does not run smoothly in the machinery of the Association. Russell & Co. were named in the circulars as the parties who would deliver the watches, but of late, Hetherington & Co. appear, and we have a letter of theirs in which they say, "We have been appointed by the Finance Committee instead of Messrs. Russell & Co., to collect the percentage money due on all prizes and forward it to Louisville."—Things are getting mixed….Not long ago we received numerous complaints from the British Provinces, especially from New Brunswick, that schemes from "the States" were flooding the country with their swindling circulars, but the tide has turned, and we find that the subjects of Her Majesty are not a whit behind the Yankees with their schemes. Here we have

"THE ROYAL DOMINION GIFT CONCERT,"

which will take place at St. Stephens, New Brunswick, and lots of prizes are to be distributed. They had one concert, but kept it and the prizes all to themselves; now the circular tells us, they have "secured a directory of names of the business men in all parts of the Union" and we may be counted in. These generous chaps send along a sample ticket, which is to be free "*Provided* you make up a club and remit $5 for 5 more tickets." These tickets are almost worth a dollar a piece as works of art, let alone the chance of drawing "a large gift." There is the Lion—real British one, none of the common African kind, with a countenance suggestive of dyspepsia; then there is the Unicorn, and the crown. All these emblems of royalty will be given in exchange for "U. S. Currency, or National Bank Bills." Still the whole affair is rather slow, and the New Brunswickers will hardly patronize their own lottery, when a Yankee can offer them a much better show. The following letter was sent to one of our readers in New Brunswick.

THIS LOTTERY IS NO GAME OF CHANCE,

as will be seen by the letter, the writer of which proposes to make a sure thing of it.

"New York, July 7, 1877.—Dear Sir.—Being the manager of the Georgia Lottery for the East and West, I make you the following proposition with a view to our mutual benefit, viz—send for 25 tickets price $20—and I will alter a number drawn from the wheel to correspond with the numbers on one of your tickets, allowing you to draw a $2.000 prize, and trusting to your honesty to divide the same with me. The reason I do not care to make the prize larger is in order to avoid suspicion, besides we can repeat this every month. The Drawing takes place every month on the 5th, so please remit immediately in order to get tickets for this drawing. Send money in your letter, it will come safely, and don't sent by Registered Letter, Money Order, or Express, as it might create suspicion and prevent us from making a good sum in a short space of time. Don't fail to remit at once, as I must leave in time to superintend the drawing. Yours truly C. L. EVANS."

Our friend Dreer, of Philadelphia, has gone into the

BUSINESS OF EXPOSING HUMBUGS,

as the following from the Philadelphia "Ledger" will show:

$50 REWARD WILL BE PAID FOR THE ARREST and conviction of a person representing himself as C. E. BOND; a tall, slim young man of 26 years, has a sandy moustache, and wears a navy blue suit, who receives subscriptions to the *American Agriculturist* at $1 for the year, and presents a receipt which he represents will buy 75 cents' worth of Garden Seed from the subscriber.

All persons are cautioned not to trust him or any one else on our account engaged in the same or similar pursuits, they being imposters.

HENRY A. DREER, Seedsman. 714 Chestnut St.

The same chap. probably. pretended to represent the firm of David Laudreth and Sons. and also the house of Robert Buist, Jr., of Philadelphia, and solicited subscriptions for the "Country Gentleman" offering to give seeds from these establishments to the value of half the subscription money….Every now and then there is a

NEXT-OF-KIN EXCITEMENT.

Immense estates are suffering in England, all for the want of some rightful heirs to take possession of them. There are just now a number of inquiries concerning a person who is acting on behalf of the heirs to one of these estates. The party asks for money, but when asked for references declines or fails to give them. That is a case that settles itself: the person must be very ignorant of the ways of doing business, or something worse, to refuse to satisfy an entire stranger that he can be trusted with the money he asks for. We have first and last known a large number of these attempts to get possession of family estates abroad, but cannot recollect of a single case in which they succeeded….The Canada papers tell how

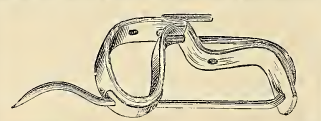
GEORGE A. ZIMMERMANN CAME TO GRIEF.

George was agent for mowing machine knife grinders. James Gibbons is a farmer. Mr. Gibbons son was induced to become agent for the grinders, but as the son had no property, the father was asked to become security for him. The father signed the paper. It is the old story. Gibbons senior did not read the paper, and the paper turned out to be something else; then receipts were signed, and they became two promissory notes for $240 each. Zimmermann was caught and tried before His Honor Judge Scott, of the county of Peel, and has a year to pass at the Central prison, where he can think of the uncertainty of the knife-grinder business.

MEDICAL MATTERS

seem to be quite devoid of novelty; in a large budget, wherein the pamphlets and circulars are of the old, old sorts, we find but one that we have not mentioned, and that by no means new. Little strips, some yellow and some white, have appeared to people in various places in various ways. If you send the slip with 25 cents to a given address [we do not propose to advertise the chaps], "I will send you something that will bring you in honorably, if you devote your attention, over two hundred dollars a month, * * * suitable for both sexes," and so on. The "something" is some stuff to mix up and be sold as as a medicine "for almost every complaint or ailment that human beings, or even the brute creation, are heir to."—It is to he hoped that every one will not rush into the business, as there would then be no body to sell to, and the chances of making the monthly $200 be seriously diminished.

Corn Husker.—A handy little implement, for husking corn is shown in the accompanying engraving. This is only a modification of the old-fashioned husking pin, made of hickory or other tough hard wood, or



a 20-penny nail; but being bent to the shape of the hand is more convenient and less tiresome than the home-made straight husking pins. This is patented, and the inventor, who doubtless spent some thought and time in bringing his invention to perfection, justly deserves some recompense for his labor. It is one advantage to the public that these little things being patented may be made safely in large quantities by one manufacturer. and thus sold more cheaply than if many manufacturers were engaged in each making a smaller number. This little implement is made by Chambers & Quinlan, Decatur, Ill.

What Next?—A Pocket Watering Pot.—There is no telling what the Yankee genus will not invent. The latest novelty is advertised in this paper as a "Pocket Watering Pot, or Sprinkler." We got hold of one of them the other day, and it is what it claims to be, except that it will want a rather spacious pocket to carry from 1½ quarts to a gallon of water; but it can be carried in the hand readily. It closes up, and is neatly painted, and looks for all the world like a book. A lady takes one of these into a room, or carries one to the cemetery, and you think she has only a book to read, but, presto, it opens into an effective watering pot, at which the plants and flowers beam with satisfaction.

Washing and Washers.—The number of machines or appliances to help in the operation of washing. shows that help is greatly needed. We have had considerable experience, first and last, with these affairs, and have learned at least two facts about them. (1). Many of these machines and appliances are really of great help. if properly and intelligently used. (2). That all of them are worse than useless. if the "help" won't be helped, but make up their minds beforehand that they are good for nothing. and take care that they shall not work. Our experience in this line has been with washing machines, in which the clothes are rubbed, pounded, or squeezed. and those appliances called "washers." in which. by means of a simple contrivance. boiling suds is kept flowing in a continuous stream over and through the fabrics. The last-named principle is the one upon which "Robbins' Family Washer" operates. There is no machinery to get out of order, and there is no wearing of the fabrics by pounding or rubbing. Used intelligently, as every machine or improvement must be used, this may be made to greatly diminish the labor attendant upon the family washing.

Basket Items continued on page 393.

Useful Farm Grist Mills.

The accompanying engraving (fig. 1) illustrates a portable farm mill, such as has been long desired. It is a burr-stone grist mill for grinding corn, or any other grain, by horse power, used direct without the intervention of a sweep or tread power. The horses are hitched to arms which are inserted in the iron-strap sockets seen upon the frame of the mill. The mill is then made to traverse upon a circular way, and in doing so a horizontal master-wheel operates the gearing, by which the stones are made to run 300 revolutions in a minute. In actual tests, 7 bushels of corn have been ground in an hour, which is an extraordinarily large amount for grist mills of two-horse power. The mill itself rotates, and the whole machine is so remarkably simple, that its operation at once engages the interest of one who sees it for the first time. There is nothing to get out of order, every thing is very strong and substantial, it occupies little space, and may be put away in a corner of the barn-floor, being brought to the center when necessary for working it; the barn floor giving ample space for both the mill and the team. It is provided with the usual means of raising or depressing the stone by the small hand-wheel and rod shown. It is a long time since so acceptable a piece of farm machinery has been brought out. It is made by E. R. Lancaster, Alum Wells, Va.

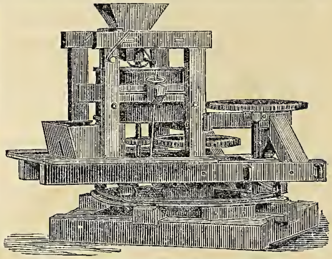


Fig. 1.—LANCASTER'S FARM MILL.

Another burr stone mill for grinding flour and feed is shown at figure 2. This has a strong iron frame, and is intended to grind cement, plaster, salt, spices, paints, etc., as well as all kinds of grain. The 16-inch mill requires a two-horse power, grinds 3 to 5 bushels per hour, making 500 revolutions per minute. The bearings are of hardened steel, and each runs in a cup of oil, which reduces the friction and prevents heating. A vertical stone mill is also made, which includes all the special points of the horizontal mill, at a somewhat less cost. The makers of this mill are Leonard & Stillman, Bridgeport, Ct.

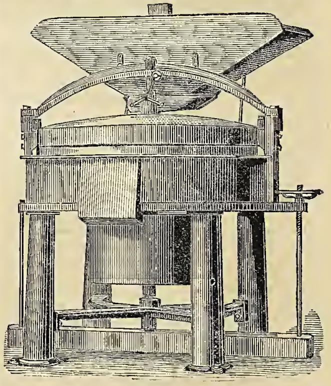


Fig. 2.—SINGLE-GEARED MILL.

The Curing of Corn Fodder.

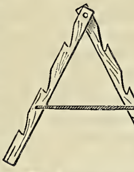


Fig. 1.—SUPPORT.

To cure corn fodder perfectly, requires care and good management—it is too valuable to be wasted in the process of saving. The chief difficulty is in preventing it from molding, on account of the large quantity of moisture contained in it. To get rid of this moisture, there must be an easy means of escape for it, and good ventilation. These may be provided as follows: some boards—fence boards will answer the purpose—are fastened together at one end in pairs, by a wooden pin passed through a one-inch auger hole, and by a cord or stay-lath about the middle, as shown in figure 1. The boards should be notched to hold rails, as shown in figure 1, or other fence boards may be tacked on to them; or panels of loose portable fence may be made to rest against them, as shown at figure 2. As many pairs of the boards are provided as may be needed for several stacks, or for one long stack; which is probably the better plan. The fodder, with the butts outward, is then piled upon each side of the range of ventilators as shown in figure 3. A continuous passage is thus made for air, and copious ventilation; and fodder stacked while quite green will cure perfectly well when put up in this way.

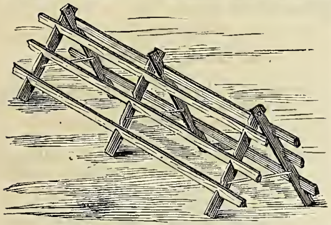


Fig. 2.—RACK FOR CORN FODDER.

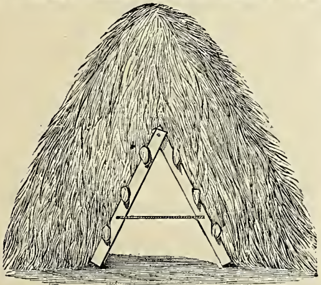


Fig. 3.—END-VIEW OF STACK.

About Guns.

Until predatory wild animals are extinct, until noxious birds cease to destroy crops and chickens, until outlaw men cease to plunder, some kind of "shooting iron" is needed upon the farm, where, living alone, or without assistance close at hand, a dangerous weapon is a "warn off" to cowardly thieves—thieves and mean men are always cowards. In many cases, a simple cheap muzzle-loader or pistol will answer, and good arms of this class are offered, (see Nos. 69 and 75, page 407). The modern Breech-loaders are of course more valuable. Where game abounds, the superior Breech-loaders, (Nos. 68 and 70, p. 407,) are very desirable.... The terms on which the several varieties of arms, named above, are offered, will render it very easy for *any one* to get what is desired..... **Target Shooting:** So long as people will seek and have some sort of recreation, it is desirable to find the *best*. Of the various popular out-door amusements, rifle-shooting is the safest and the least demoralizing, and the most desirable in some other respects. While there are thousands of rifle clubs in our country, not a dozen accidents, all told, have been reported, and the few that have occurred, have nearly all happened to careless outside parties. The regulations of the organized rifle clubs render accidents nearly impossible. Hundreds have lost their lives, directly or indirectly, from over-straining on the ball-field. Not less then ten thousand persons have suffered severe injuries, contusions, loss of sight, broken fingers, etc., in ball-playing. Very numerous cases of drowning casualties, and sickness and death have come from boating. In boating or ball-playing only a picked 6, 8, or 9 derive benefit from the exercise. In the rifle club all take part. The gentler but efficient exercise of walking, gun-cleaning, and loading, etc., are invigorating. We leave out horse-racing as unworthy of being brought into the comparison. Target shooting develops steadiness, and no little science and skill, for in long-range shooting especially, the barometer, thermometer, gravity, direct and diagonal wind-force, etc., are studied. Temperance is promoted; the target shooter soon learns that to be successful, he must eschew alcohol and tobacco, or be very moderate in their use, or his nerves are spoiled for such an exercise. As a rule, profane and unclean language find little favor at the rifle range. Steadiness of aim and fixed attention are cultivated. We will not discuss here the silent power possessed by a Nation, which has among its citizens a large force of men who can spring to its defence in an emergency, with an ability to keep obtruders at a respectful *distance* from their practised aim. Twenty-five expert riflemen in each town, amounting to half a million in the whole country, would be far more efficient for defence against invasion, than fifty regiments of regular soldiers. The latter would cost the nation fifty million dollars a year; the former would cost nothing, or *less*, for the rifle-practice furnishes good amusement, and diversion from lower associations, as shown above. This subject was discussed fully by us in October, 1875. Some interesting and useful notes and engravings on the science and practice of rifle shooting will be found in the December *Agriculturist* for 1875.

Those desiring the best rifles for target practice, or long-range shooting, and hunting, will be interested in reading Nos. 71 and 74, pages 407, 408 of this paper. As there noted, it will be quite easy for a considerable number of persons, to each secure a good gun without cost.

Silver Ware Cheap.

We call special attention to the fine assortment of *first-rate* silver-plated ware, described on page 402. We know the parties that make it, and can recommend it with great confidence. The style of the articles is precisely the same as those of solid silver. The coating of pure silver is so *thick*, that, with ordinary use, it will last many years, during all of which time the articles are as good, and as ornamental, as solid silver, and only expert judges can distinguish them from solid silver, while their cost is far less, and the loss less if stolen. Further, the interior is white metal, so that, if by hard and excessive usage any portion of the thick coat of silver should be worn off, it will not show, as on most plated ware.—Here then is a chance to get first-rate articles, with no risk of having merely silver washed or thin-coated articles. It will be seen that almost any family can get one or more of the articles without expense, by simply using a little time and skill in exhibiting the *American Agriculturist*, and collecting a few names as subscribers. Every person persuaded to take this journal, we feel sure, will be benefited thereby far above its cost. Now is a good time to make up a club, and secure for home use, or a present, some of these most desirable articles, as every subscriber sent in this month, whether in a premium list or otherwise, will get the paper 14 months for the cost of a year's subscription.

What Farmers Must Do.

At present agriculture is *the* one flourishing pursuit in this country. In the main it will continue to be so. But the native wealth in the new soil, the organic matter accumulated in centuries past, is fast being used up. Even on what have been termed the "inexhaustible prairie and bottom lands," there is generally a decreased yield of crop. On the average, with the same culture, a soil will not yield, with the same treatment, over half as much the third and fourth decade of (10) years, as it did the first and second decade. It therefore stands farmers in hand, who would be successful, to read, think, and observe; to study up new modes of culture, fertilizing, draining, improved varieties of crops, improved implements and animals. He who would not fall behind in the race, or who would not find his labor less and less remunerative, must inform himself. Knowledge is power, is profit. In this unusually prosperous year, let every one set apart at least a small sum to supply himself with books and periodicals concerning his own business, for these furnish him with a knowledge of the practice and experience of a multitude of others, and help him to think and plan better, to adopt more profitable methods, varieties of seed, animals, etc. The more farmers there are in any neighborhood who do this, the more improvements and experiments will there be brought under the direct observation of each farmer in that neighborhood. For this reason alone it is for the interest of every farmer to introduce among his neighbors as many agricultural periodicals and books as possible; he is thus helping himself in the immediate future.—In this connection we suggest that during this month our readers make an extra effort to get up a club of subscribers for this journal, and not only take advantage of the offer of the paper the rest of the year free to those subscribing now for 1878, but also secure for general use one of the Farmers' Libraries offered on page 408. See also hints to Farmers and Farmers' Clubs on page 399.

Science Applied to Farming.—XXXIV.

More About Ashes as Fertilizers.

In giving reasons of the high value of ashes as fertilizers, I have laid special stress on several points: (1.)—They contain *all* of the food ingredients that the plants require from the soil except one, Nitrogen. (2.)—By their chemical action they render the inert nitrogen of the soil available to crops. (3.)—They also help to set free potash and other mineral ingredients of plant food that are locked up in insoluble combinations in the soil. (4.)—They improve the mechanical condition of the soil. For instance, they make heavy soils lighter, and thus provide space for air and moisture to circulate through them, and prepare food for plants, enabling the roots to make their way to the food more easily, and counteract the ill effects of drouth. (5.)—Thus, by virtue of what they themselves contain and what they enable soils to furnish, they constitute practically a complete fertilizer. (6.)—Hence, like stable and yard manure they are fitted for all soils and crops. They are accordingly worth more for general use than ordinary commercial fertilizers such as guano, phosphates, bone, fish, potash salts, and the like, which contain but part of the list of necessary elements of plant food, and do far less to aid crops to economize what the soil itself contains. (7.)—And finally, they are generally applied in large quantities, are exposed to scarcely any waste until they are used by the plants, and therefore their effect is as lasting as it is valuable.

Plant Food Removed from Soil by Sundry Crops.

In this connection it will help us to notice what amounts of the more important ingredients of plant food are removed from the soil by various crops, as shown in the Table below. It will of course be understood that the figures in this, as in the other tables, represent general averages.

KINDS AND AMOUNT OF CROP.	INGREDIENTS REMOVED FROM SOIL.					
	Potash.	*Lime.*	*Magnesia.*	*Phosphoric Acid.*	*Sulphuric Acid.*	*Nitrogen.*
	lbs.	*lbs.*	*lbs.*	*lbs.*	*lbs.*	*lbs.*
RYE. Grain, 25 bushels (1,400 lbs.) Straw 3,500 lbs.	35.1	12.9	6.8	19.1	4.1	38.6
OATS. Grain 30 bushels, (960 lbs.), Straw 2,000 lbs.	22.0	8.2	5.0	9.8	3.0	29.6
WHEAT. Grain. 20 bushels, (1,200 lbs.) Straw 3,000 lbs.	25.3	8.8	5.7	16.1	3.4	39.4
CORN. Grain, 50 bush., (2,800 lbs.) Stalks, 6,500 lbs.	72.8	26.8	22.5	51.0	8.4	76.0
HAY. Mixed grasses. 1½ tons, (3,000lbs.)	39.6	25.8	9.9	12.3	7.2	46.5
POTATOES. Tubers, 150 bushels (9,000 lbs,)	51.3	1.8	3.6	1.44	5.4	30.6
TOBACCO. Leaves, 1,206 lbs., Stalks, 1,100 lbs., dry	118	88	19	22.5	17	82

All of these ingredients are regarded as indispensable to the growth of plants. If any one is lacking, the whole crop suffers in proportion. By continued cropping the supply of some of them becomes reduced, and a poor yield follows. The chief use of fertilizers is to furnish the plant food the soil fails to supply. Sometimes one, and sometimes several of these ingredients are lacking. The ones most often deficient are phosphoric acid, nitrogen, and potash. Sulphuric acid, lime, magnesia, are less frequently wanting. Every crop removes certain other ingredients, as iron, soda, silica, and chlorine, but these are supplied in abundance by every soil.

Plant Food Supplied by Ashes and other Fertilizers.

To understand clearly the relative action of ashes, and some other ordinary fertilizers, let us notice their comparative costs and their actual effect in the field. Fifty bushels of *unleached* ashes, 48 lbs. per bu. (2400 lbs.) at 20c. per bush. would cost $10 per acre. Sixty bushels of *leached* ashes, 60 lbs. per bu. (3600 lbs.), at 16⅔c. per bu. cost also $10 per acre. Many farmers apply them more largely.—A fair dressing of No. 1 Peruvian Guano, ("10 per cent Ammonia Standard," brand) is 300 lbs. per acre. This will cost $9, at 3 cents per lb. ($60 per ton.)—A dressing of 400 lbs. good "Ammoniated Superphosphate" at $45 per ton, or 450 lbs. of pure ground bone at $40 per ton, would cost the same. A similar cost per acre would give of the German Potash Salts, 360 lbs. Muriate containing 80 per cent Chloride of Potassium (50 per cent actual potash), at $50 per ton; or 300 lbs. of 80 per cent Sulphate (43 per cent actual potash), at $66.67 per ton.—Ten loads of barnyard manure, of 1500 lbs. per load, a very small dressing per acre, at $1 per load, would also be $10. Taking the above fertilizers as they run, and the above as the average cost, and omitting the other ingredients (which are of small account, except the organic matter of the barnyard manure, which is always more or less useful), we have the following table:

KINDS OF FERTILIZER.	*Amount per Acre.* lbs.	*Cost per Acre.* $ cts.	FURNISH'G INGREDIENTS. *Potash.* lbs.	*Lime.* lbs.	*Magnesia.* lbs.	*Phosphoric Acid.* lbs.	*Sulphuric Acid.* lbs.	*Nitrogen.* lbs.
Unleached Ashes....	2400	10.00	204	768	120	48	36	—
Leached Ashes......	3600	10.00	54	900	126	54	7	—
Peruvian Guano.....	300	9.00	11	47	6	47	4	25
Superphosphate......	400	9.00	—	76	—	52	64	10
Bone Dust...........	450	9.00	—	140	—	104	—	15
Fish Scrab half dry..	1000	9.00	—	80	—	65	—	55
Muriate of Potash...	360	9.00	180	—	—	—	—	—
Sulphate of Potash..	300	10.00	129	—	—	—	125	—
Barnyard manure....	15,000	10.00	92	105	27	39	24	67½

This table brings out several important points. I wish the reader might look at the figures very carefully, and note (1) what large quantities the ashes give of all the ingredients, except nitrogen—much more of each than is contained in the barnyard manure. (2) That the rest are all deficient in some of the important ingredients of plant-food—the guano and fish furnish a good deal of nitrogen, and more or less phosphoric acid; the bone and phosphate a good deal of phosphoric acid and a little nitrogen, while the potash salts have little else of value than potash. (3). The unleached ashes furnish a great deal of potash, and the leached ashes considerable, while both have very large quantities of lime, whose indirect action in changing the inert nitrogen, potash, or other plant-food of the soil into forms that the plants can use, is very valuable. So much for the chemistry. Now for

The Effects of Ashes and other Fertilizers in the Field Farm Experiment.

I examined some experiments of Mr. Farrington, the Farm Superintendent of the Maine State College of Agriculture and Mechanic Arts, at Orono, which clearly illustrate the action of several of the above fertilizers. A meadow, a moderately heavy clay, was being reseeded to timothy and clover. In the middle several plots were measured, and different fertilizers applied. Land plowed August 15th, 1872, and thoroughly pulverized. Seed sown and fertilizers evenly spread and harrowed in about a month later.

Plot I.—Stable Manure.
Plot II.—Fish Scrap.
Plot III.—"Top-Dressing."
Plot IV.—Ammoniated Superphosphate.
Plot V.—Lime.
Plot VI.—Wood Ashes, (Unleached).
Plot VII.—No Manure.

The fish scrap (II) was the pomace left after pressing the oil out of Menhaden. The top-dressing (III) was a mixture of artificial fertilizers, calculated to furnish nitrogen, phosphoric acid, and potash, in the proportions usually found in hay. The stable manure was applied at the rate of 6 cords per acre, and as the cost of the application to each plot was to be the same, the amount of the other fertilizers was very large, viz., at the rate, per acre, of about 1,400 lbs. of superphosphate, 2,500 lbs. fish scrap, and 210 bushels of ashes. No manure applied since 1872. Five crops taken off. Plot VI, ashes, has lead the rest from the start, and the fifth crop, this year, was good in quality and quantity. The timothy holds out well, with considerable clover, and but little of other grasses or weeds have appeared.—Next to ashes, Plot I, (stable manure), did very well two or three years, but has since fallen off very much; the clover has nearly run out, and considerable Red-top come in. Plot III proved somewhat inferior to Plot I, but was superior to Plots II and IV, very probably on account of the potash it contained in the fish, and superphosphate having none. The fish scrap was rich in nitrogen, and contained also considerable phosphoric acid and lime. The first crop was good, the second poorer, and the last crop amounted to very little. The clover has disappeared, the timothy is scanty, both giving place to a sparse, inferior herbage. This is the characteristic effect of nitrogenous fertilizers—a quick, stimulating action, but their force soon spent. The scant mineral food of the fish supplied one crop, after which its strength was mainly gone. The superphosphate, (Plot IV), had less nitrogen and more phosphoric acid. The yield, though not as much at first, was more lasting. Still, its effect was soon gone, and both clover and timothy fell away, and red-top, daisies, and weeds feebly filled their places. The phosphate, like the fish, was a partial, one-sided fertilizer, supplying part, but not all the crop needed, and it could not, like ashes, urge into activity from their sluggish combination in the soil, the materials which in itself were lacking.—Plot V (lime) was no better than Plot VII.

One experiment does not prove a principle. The chief value of the above is for the special place where it was made, but it is clear that for that time and place ashes brought the best returns for the money, and horse manure the next; and I should not be surprised if Mr. Farrington finds, as many other farmers have done, that even leached ashes, at 18 to 28 cents per bushel, would be more profitable than any superphosphate he could get at $45 per ton, or guano at $60. I know there are many soils on which guano, nitrogenous superphosphate, or bone, will bring good crops for years and years. Where the nitrogen, and phosphoric acid, and lime they supply is all that is needed, and can be got in them most cheaply, there is the place to use them. By mixing these with German potash salts, complete fertilizers may be made which, like the top-dressing in Mr. Farrington's experiment, will do good work. Sometimes such mixtures will serve as well as the best barnyard manure or ashes. But the ashes and manure are always sure, and in the majority of cases the results would, I believe, be very much like Mr. Farrington's.

W. O. Atwater,
Wesleyan University, Middletown, Conn.

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Better Times Have Come,

For farmers certainly and decidedly, and measurably for many other classes. Our farmers have from this year's wheat crop alone, enough *surplus* to bring them at least Seventy-five Million Dollars, probably near a Hundred Millions, if sold at present prices. And what is fortunate for them, owing to the great war in the East, and a to general shrinkage in this crop in Great Britain and on the Continent, there is a demand for all our surplus, if it be not unwisely held back for too high rates, until the extra demand ceases and prices decline.—The Providential delay of killing frosts, with the warm September weather, has ripened up what will perhaps be the greatest corn crop ever produced in our country, taken as a whole. The foreign demand will take a good deal of this in the kernel, and a great deal more in the form of pork and lard. Fortunately, a good yield of other crops will furnish food for the masses, and leave more wheat and corn for export. The crops are so bountiful that, even with the large foreign demand, prices are not likely to rise much, perhaps not keep quite up to present rates, but any decline will increase the total amount of export. We judge that the present prices will be nearly, if not quite, maintained.

This country will probably receive from abroad, during a year from July, not much, if any, below *Five Hundred Millions of Dollars* for the products of the soil, including wheat, corn, cotton, tobacco, meats, live animals, pork, lard, butter, and cheese. This immense sum will go mainly into the hands of the producers, to be used in paying debts and making purchases; it will pass from hand to hand many times, through a multitude of channels; it will help the railroads and canals, will quicken manufactures and trade, and in the end benefit all classes, though none others so much as those who, by patient toil, have extracted these dollars from the soil.

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W. C. Tracy's Poultry-House.

On page 373 is given a view of the poultry-house of W. G. Tracy, Towanda, Pa. Mr. Tracy writes in regard to this house, that after several years use of it, he could not change it to suit him any better. In front of the house is an orchard of two acres; in the rear on the south is a meadow of six acres. When the grass in the runs becomes thin, the fowls may be turned into the meadow and orchard. With this range the stock are always in the best of health, and the eggs rarely fail to produce strong chicks. The young broods are cooped in the orchard. The arrangements of the house are such as to secure light, ventilation, and warmth. All the windows are hung with weights and pulleys, and there are three ventilating shafts. The partitions are ceiled to the hight of three feet, the rest is lattice work. The perches are of 2 x 4 stuff, laid flat-wise, with a groove on the upper side, in which kerosene oil is poured every two weeks to destroy vermin; they are also movable, resting loosely in cleats nailed to the wall. Under each perch is a board platform to catch the droppings, and this is kept covered with dry dust two inches deep. The nests are cheese-boxes placed on the floor beneath the platforms. The floor is always kept covered with clean, coarse sand. The store and feed rooms are under the stairs, as shown in figure 2, and there is also a pen for breaking up setting hens. The plan of the second story is given at figure 3. The runs are planted with plums, in the hope of thus circumventing the plum curculio. Mr. Tracy breeds Brown and White Leghorns; Partridge and Black Cochins, and Plymouth Rocks.

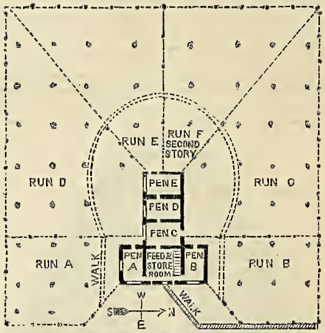


Fig. 2.—PLAN OF POULTRY HOUSE AND YARDS.

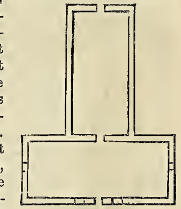


Fig. 3.

Ogden Farm Papers.—No. 92.

BY GEORGE E. WARING, JR.

In August, 1875, I gave in these papers an account of Rogers Field's invention for accumulating the trickling flow of a house drain in a tank, which should retain it until full, and then discharge it all rapidly by the action of a siphon, which a sudden addition of a pint or two of liquid would bring into operation. The rapid discharge effects the cleansing of the drain. These flush-tanks, made of iron—and with all their appliances complete—are now for sale by the agent of the patentee. They cost $35. In the same paper I gave instructions for making such a flush-tank by the use of a kerosene barrel with a siphon made of lead pipe. I failed to give it correctly in the illustration, and I have recently had a letter from a reader who followed those instructions, and found that the siphon would not come into action unless a very large addition was made to the contents of the barrel. Any usual flow from the sink drain would merely overflow through the siphon-pipe without starting its *siphon* action. The reason for this is that I directed the turning of the pipe out through the side of the barrel *below the top*, so that even a couple of gallons of water discharged rapidly, having to raise the level in the whole barrel, would not suffice to fill the bend of the siphon. (See cut on page 12 January number, 1876). All that is needed to correct this fault, is to carry the pipe up through the *top* of the barrel, and turn it over the side. For its protection against bruising, it may pass through a notch cut in the chine. With this arrangement the barrel will first be filled quite full, so that any addition would apply entirely to the starting of the siphon. The flush-tank system has now had such thorough trial, that its efficiency has been fully proved, and it is quite sure to come into general use.

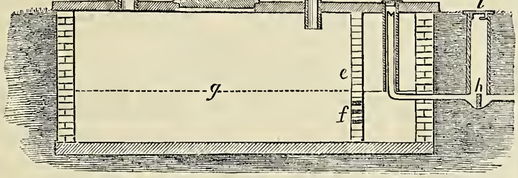
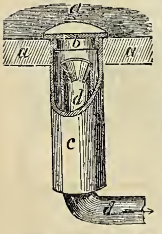


Fig. 2.—FLUSH TANK WITH MR. FIELD'S SIPHON.
a, Soil-pipe and Ventilator; *b*, Iron Man-hole Cover; *c*, Drain-pipe; *d*, Siphon; *e*, Partition Wall; *f*, Openings to admit Liquid to Siphon Chamber; *g*, Flow Line; *h*, Dam.

Mr. Field has recently made a modification of his invention, applicable to the flushing of town sewers. I received the description of this at a time when I was much puzzled to know how to get rid of the sewage of a large country house, for which no good outlet could be had, and where a cesspool could not be used; a cesspool never *should* be used, by the way. I applied the new system, and it has worked so perfectly, that I am glad to make it known to all my readers who are interested in the drainage question. The part which it is necessary to buy from the patentee is only the siphon, which may be transported for little cost. All the rest is mason work, which may be made at home, and common piping which may be bought in any town.



1.—MR. FIELD'S SIPHON.
a, *a*, *a*, Covering Stone; *b*, Screw Cap: *c*, Outer Pipe of Siphon; *d*, Inner Pipe of Siphon.

It is one great advantage of this new form of flush-tank, that it needs but little elevation of the storage-room above the level of the drain—as the necessary capacity may be gained by making the tank as *large* as is desired. The siphon is shown in figure 1. It consists of a vertical pipe rising from the outlet of the tank to a point a little above the lower side of the covering stone. Another pipe, of larger size, closed at the top with a screw cap, is inverted over this, through a hole in the stone. The outer pipe extends down to nearly the level of the outlet, it is made fast to the stone, and its screw-cap, may easily be removed for examining and cleaning the pipes. The space between the two pipes makes the short leg of the siphon. The small pipe makes the long leg. The top of the smaller pipe is furnished with a funnel-shaped collar, which causes any liquid that flows over it to fill the pipe with a spray which, as it falls, carries down the air in the pipe and sets the siphon in action. Without the funnel-shaped collar, the water would flow down the sides of the pipe, and it would take a much greater volume to start the siphon action.

Figure 2 is a sectional view of the tank complete. Its form and size may be varied to suit circumstances, and it may receive one or a dozen pipes, according to the number of sinks, etc., to be discharged into it. At least one of these pipes must act as a ventilator—not passing beyond the under side of the stone, and continuing, without a trap, and of full size, quite up beyond the roof—not delivering near a window, nor near to the top of a chimney. This must be an iron pipe with well leaded joints. Any pipe that is not used as a ventilator, may pass well down through the stone.

The objects to be accomplished are these: (1). To store such an amount of liquid as shall suffice, when rapidly discharged, to "flush" out the drain through which it is to pass, washing it clean from end to end. Or, if absorption drains are to be used, to fill these rapidly, so that the whole system shall receive a due proportion of the liquid. (2). To provide settling room, below the level of the outlet, sufficient to retain all solids which may be deposited. (3). To retain all grease and scum so that it can not get into the siphon or drain, and cause obstructions. (4). To prevent the escape of the resultant gasses of fermentation. The further desideratum would be to admit a circulation of air to the tank, but, as it stands outside of the house, and as it, and its ventilating pipe, are hermetically sealed, this is not absolutely essential.

The only part of the work which needs special description, is the construction of the partition wall, (*e*, *f*). This is a brick wall 4 inches thick, built of bricks lying on their sides, well bedded at the top and bottom, but being laid without mortar at their ends—for the free admission of the air needed to stop the action of the siphon. At a little distance below the flow line—below the lowest point to which the scum can ever descend—there are holes left in the partition, (about 2½ inches square), to allow the water to flow freely to the siphon. The operation of the apparatus is this: The waste liquids flow in through the pipes *a* and *c*. Their sediment settles to the bottom, and their grease and other floating matters remain at the surface. If we fill at once with clean water to the hight of the line *g*, no floating matters of any kind will pass through the holes in the partition wall. In time, the tank will be filled to the top. Then any addition to its contents, causes the siphon to start. Once started, its flow is rapid until the level, *g*, is again reached—when air enters the siphon and "trips" it, so that nothing more can be discharged until the tank is quite full again. The dam, *h*, is essential to check the entrance of air, which would prevent the siphon from "catching," unless with a very rapid flow. The water stands behind the drain to such a hight as *nearly* to close it; even a slight flow fills the vacant space in the pipe, but after the flow has stopped, the little vent left allows air to enter and ensure the "tripping."

The tank I have just constructed is 6 feet in diameter, and about 4½ feet deep, the outlet is about 2 feet above the bottom. It fills once in about 1½ to 2 days, and it discharges in *six minutes*. As the size is so great, I am disposed to think that it will not require artificial cleansing. Both the scum and the sediment being organic matter, and the warm water discharged into the tank being considerable, I think they will decompose about as fast as they form. Their decomposition will produce ammonia, which will turn the grease into soap, and allow it to pass off in solution. In the case in question, the whole sewage of a large country house—with an average of twenty inmates—is perfectly disposed of by 400 feet of absorption drains underlying about 2,000 square feet of lawn. I have watched it carefully for weeks, and it seems perfect in all respects. Mr. Field certainly deserves much credit (and reward) for so valuable an addition to our comfort and health. The invention seems simple now that it is perfected, but simple as it is, it has cost several years of patient and costly experiment. It was found no easy matter to make a siphon that could be started with a very slight flow, yet could be stopped on the least cessation of the discharge.

"Would it pay me in value of manurial product (as I have made up my mind to waste my drainage further from my house than I now do), to conduct the drainage of my house (including water closets, baths, wash water and kitchen sink), a distance of 740 ft. with a fall of only about 8 ft. into my manure cellar, where the solid parts would remain with the manure, and the liquid parts would drain off into the liquid manure cistern and be used for irrigating grass land? I estimate the average quantity of water used in my house at 200 gallons per day. I should add rain water to my liquid manure before using it. Would it be practicable to conduct this drainage such a long distance upon such a light fall? I should expect to use 6-inch cast iron pipe."

Probably not,—because you can dispose of your house waste more easily. I should advise your using a flush tank and absorption drains, which would cost less, all told, than the cast-iron pipe you propose using. You can lay absorption drains near the house, or in the garden, or in a grape border, according to circumstances. Put the drains only 10 or 12 inches below the surface of the ground in lines 6 feet apart, and you will get considerable effect from the use of the manure in this way. The flush tank may be made as described in another part of this article. Even if you should follow out the course you propose, you should use the flush tank,—otherwise your pipe will become choked with kitchen grease and other rubbish. Then again, a 4-inch pipe will be *better* than a 6-inch pipe,—because it will be less likely to become choked, carrying a greater depth of flow. The smaller size will have much more than ample capacity for the work. Furthermore, vitrified drain pipe, with well connected joints, and laid on a firm foundation, will be as good as iron pipe, and will cost less and last longer.

The Sixtieth St., N. Y., Cattle Market.

The commerce of the City of New York has been greatly helped by the enterprise of the N. Y. Central and Hudson River Railroad Company, in erecting a monster grain elevator, and an immense cattle yard and market, in a central and very convenient position in this great city. The cattle business, while it has attained very great proportions, is yearly increasing, and needs spacious accommodations. The week ending Sept. 3d, for instance, 3,109 beeves, 51 cows, 2,152 calves, and 15,580 sheep, were sold at this one market. Few hogs come here, as the yards at 40th St., are specially devoted to these animals. In one day 100 cars of beeves and 20 to 30 of sheep, are frequently unloaded, when business is only moderate; when arrivals are heavy, these numbers are often exceeded. The handling of so many animals can only be done with economy when the arrangements are very convenient. In the new cattle market the cars are brought up to the gates of the pens, and the beasts are changed from one to the other in a very short time, and without the least trouble. This saves expense and damage to the stock from over-heating or bruising. All that is saved in the cost of handling stock, comes in the end to the feeder of the cattle. This cannot be avoided from the nature of the business, and thus those who raise the cattle, gain this advantage from the enterprise of the Central Railroad Co. Notwithstanding all the outcry against railroads, in some cases, without doubt, well founded, it should be remembered that they have added very much to the value of every farm in the country, near and distant; for without them, there would be no market near, and no possibility of distant farm products ever reaching the shipping ports at all, for their value would be more than wholly swallowed up in the otherwise slow and laborious methods of transportation. The benefits gained by the live stock interest of the country from the establishment of this great market, and the consequent economy in handling yearly 150,000 beeves, as many calves, and not far from a million sheep and lambs, are together but a very small item in the profits accruing to farmers from the railroads. This is a fact that should not be forgotten.

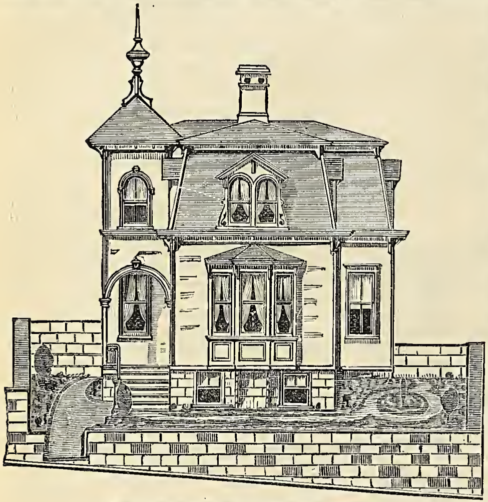


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

The engraving gives a general view of the market, with the Hudson River and the great grain elevator upon one side, and the numerous converging railroad tracks upon both sides. The pens and yards, conveniently arranged for access both for the arrival and departure of stock, either to the slaughter-houses or to the docks for shipment, are seen in the center. The large central building is the hotel; that in the front distance is the sheep-house, in which 7,000 sheep can be penned in the different floors. The slaughter-houses and offal-rendering houses are in the distance, and these have every facility for economically using up the waste.

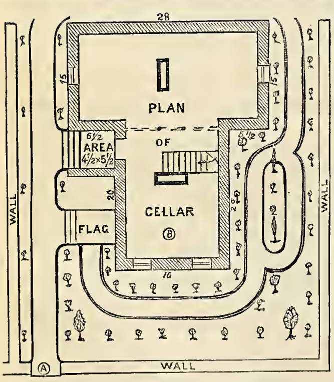


Fig. 2.—PLAN OF CELLAR AND GROUNDS.

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A French-Roofed Cottage Costing $2,000.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were designed for a cottage now being built by Mr. W. W. Billings in New London, Conn. These sketches embrace also the outlines of the grounds immediately surrounding. The site faces a street having steep grades, conforming to the general declivity upon which a large part of the city is built. The grounds are raised above the side-walk and leveled in front, and are faced with stonework from 2½ feet high at left, to 6 feet high at the right. The rear grounds are 6 feet higher than in front. The step *A*, at the entrance, (see fig. 2), is 8 inches above the side-walk. *B*, is the bottom of the cellar 2 feet 2 inches higher than *A*, and is solid rock. The walk leading from *A*, to the rear ascends 1½ inch to the foot; the banks at either side are terraced, and have stone steps inserted in them leading to the flagging at the foot of the porch steps, and also to the area, or cellar entrance..... **Elevation.**—(Fig. 1.)—The French roof style is well adapted to this situation on account of its rounded and solid appearance. The irregularities of outline secure agreeable features of variety and picturesqueness. The Foundation shows 4 feet above ground in front, and 1 foot in the rear. The Porch is in an angle, and the second story extending over it is carried up vertically past the slated part of the main roof, forming a tower-like corner. This corner is largely supported by a single column, and to make it as light as possible, slating of this portion is omitted.—(*As usually laid, slate weighs 500 pounds; tin 50 pounds per square.*)..... **Cellar,** (fig 2.)—Hight is 6½ feet. Four windows are placed where they give light to every part. An outside door opens to the area, the latter being covered by the front porch. The front portion of this cellar can easily be finished off for a work room or summer kitchen..... **First Story,** (fig. 3.)—Hight of ceiling 10 feet. The arrangements are simple and convenient, comprising a Hall, Parlor, Dining Room and Kitchen. The main entrance leads from the right of the porch, and the hall runs parallel with the front. Many persons prefer the entrance arranged in this way, as the contents of the hall are not exposed to the street whenever the door is opened, or left ajar. A partition crosses the hall under the platform, adjoining the cylinder, forming a rear passage leading from the kitchen to the cellar stairs. The Parlor has a large Bay Window in front, with a marble mantle directly opposite. The Dining Room and Kitchen each have windows giving views in three directions. The small wing at the rear contains a good sized pantry, closet, and the rear entrance or lobby..... **Second Story,** (fig. 4.)—Hight of ceiling 9 feet. The divisions include a hall, three large chambers, a bed room, and three closets. All parts are well lighted. Ventilating Registers are placed in the center of each chamber ceiling. The space above this ceiling under the tin roof is ventilated through 8 inch pipes inserted in opposite sides of the roof. These pipes have funnel-shaped covers, elevated 2 inches above the upper end of the pipes..... **Construction.**—The foundation walls are of semi-dressed stone. The chimneys are of hard brick, the cellar portions are constructed with a hollow space or ash-pit, arranged to receive the ashes from the fires of the first story. The siding is beveled clap-boards, laid on sheathing felt. The mansard parts of the main roof are covered with 8×16 inch Keystone slate laid on felt. All other roofs are of IC. charcoal tin, all laid on seasoned boards.—The two full stories are hard finished upon two coats of brown mortar. All parts usually painted have two coats of paint, of materials and shades to suit the owner. For suggestions on selectng colors or shades see June *Agriculturist*, 1877.

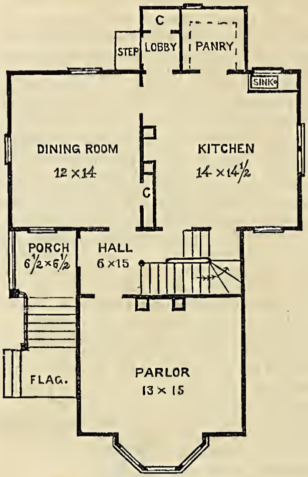


Fig. 3.—PLAN OF FIRST FLOOR.

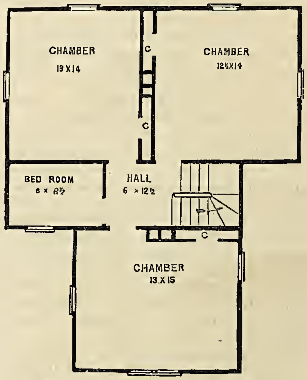


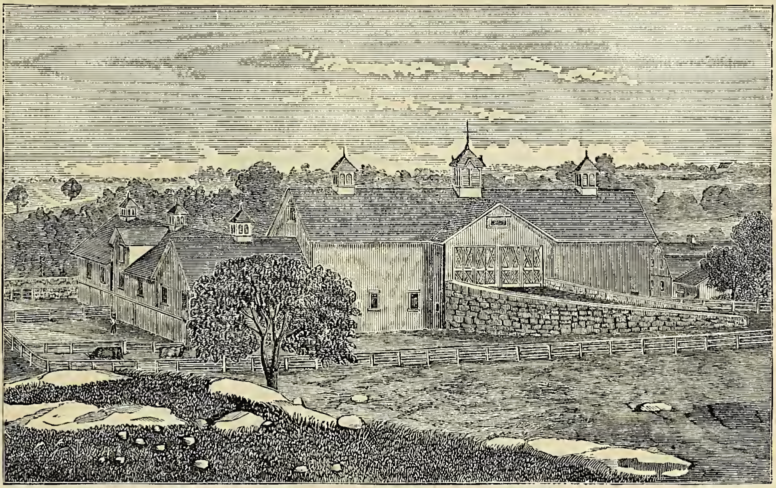
Fig. 4.—PLAN OF SECOND FLOOR.

Estimate: cost of materials and labor.

46 yards excavation at 20 cents per yard	$ 9.20
1300 feet stone foundation at 15 cents per foot	195.00
40 ft. blue-stone, at 25c. per ft	10.00
5000 bricks in chimney at $12 per M	60.00
700 yards plastering, at 30 cents per yard	210.00
3650 feet of timber, at $16 per M	58.40
100 joist at 14c., $14; 400 wall strips, at 11c. $44	58.00
1660 feet siding at 2¾c. per ft	45.65
Cornice materials $70; felt, $10	80.00
220 rough boards, at 15c. each	33.00
9 squares slate at $9 per square	81.00
13 squares tin, at $7.50	97.50
194 spruce flooring at 20c. each	38.80
14 pine flooring at 25c. each	3.50
4 cellar windows (complete) at $3 each	12.00
8 plain windows, (complete) at $12 each	96.00
1 bay window, complete	50.00
7 dormer windows at $4,	98.00
Porch finished, $22; mantles, $50	72.00
Stairs, $65; nails, sink and ventilator, $32	97.00
Closet, finished, $13; painting, $150	163.00
18 doors, (complete) at $9 each	162.00
Carting, $25; labor not included above, $225	250.00
Incidentals	19.95
Total Cost, complete	**$2,000,00**

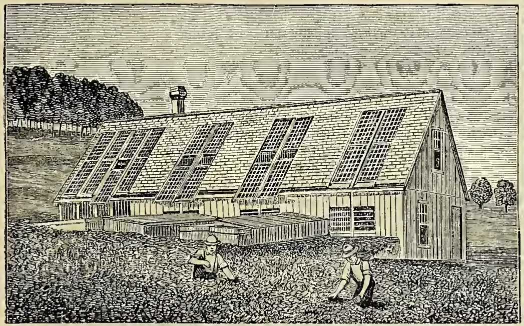
Some Convenient Poultry Houses.

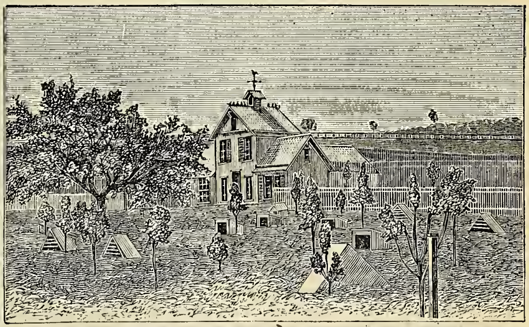
There are poultry houses which cost much money, but in which few eggs are laid, and in which the hens have but small comfort. It is not the material of which a house is built, but the plan upon which it is laid out, that makes it serviceable, or not, in use. There are a few absolute requisites about a poultry house; among these are light, good ventilation, warmth, arrangements for perfect cleanliness, no harbors for vermin, and such a plan of structure that the fowls can be managed without fuss or disturbance. Without these, there cannot possibly be any success with poultry, and with them success is certain, if the fowls are fed and cared for with that tact and judgment which results from experience or a rare intuitive skill. We have been favored with the plans given herewith by two very successful poultry breeders. One, Mr. F. H. Kinney, of Worcester, Mass., is the well-known breeder of Brown Leghorns. His poultry house is in his strawberry garden, and the photograph from which the engraving is made, was taken during the picking season. The details of the house are thus given by Mr. Kinney:


THE BARN AT "ECHO FARM," THE PROPERTY OF J. RATCHFORD STARR, ESQ.—(*See page* 378.)

I have just furnished specifications to a gentleman in Boston for a hen-house like mine, 20 by 50 ft., and one story and a half high. I furnished plans and specifications for a gentleman in New York for one the same width and 500 ft. long; this has been in use over two years, and is well liked. It is somewhat expensive, but not so much so as the small house on the colony plan recommended by Mr. Stoddard, and is much more convenient and economical. My house has only one story, but the extra amount of valuable room saved by the half story, and the convenience in cleaning out, ventilation, etc., more than pay. I am convinced that a roof, with the rafters on each side as long as the building is wide, is the most profitable. No snow lies on such a roof, and no water will get in; one can have as little glass as he wishes, or none at all; but I like the south side about half glass, and one window every 20 feet or so on the north side for ventilation. I whitewash the windows on the outside in summer, using a force-pump with thin whitewash. It is not too warm in winter without whitewash. However many hens I may keep, I shall follow the same plan for a house 20 ft. wide, a story and a half high, and long enough for as many 6 ft. rooms as I want; 20 ft. wide gives 16 ft. long for room and 4 ft. for a walk up on the north side.

I keep 25 fowls in such a room the year round, with a run outside 12 ft. long, 3½ ft. wide, and 2½ ft. high, covered with lath all around, ½ an inch apart on sides and 1½ inch apart on top. I make the runs for fowls and chicks alike. Covers are made in sections 3 ft. long, so as to be removed at any time, to clean out the runs or put in loam, sand, leaves, weeds, etc. The runs are between the windows, to allow me to back a cart or harrow between them and throw the manure out of the windows of the lower or upper story, as also out of the runs. At the extreme end of the runs out of doors, we have a tight box, without bottom, 2½ ft. high next to the runs and 1½ on the south end, just large enough for a hot-bed sash to cover it, with a hole cut through from the run. This is a very important "annex," especially in the winter—the fowls enjoy a dust bath, and I can put in sulphur, tobacco dust, or any other good insect destroyer. Another important thing, hard to show on a plan, is a cover for the run in winter, or in case of long storms of rain. We make them of 12 ft. boards, matched pine, and cleated together strongly with wrought nails, well clinched. The end away from the building, on the south end, we make tight with the same kind of boards, and nail cleats on to the building, to slide the north end of the cover under; one cover covers two runs, and when they are not wanted, I pack one upon the other, and they take but little room. To make the runs, one half of the pieces, 12 ft. long and 2½ ft. high, are made of ¾ inch or ⅞ matched boards, cleated together; such a piece makes one side of two runs, being set up between them. My house is under ground on each side 3 ft.; the land was shaped just right, and I had plenty of stone; but if the frame is made of 2x4 stuff, boarded on each side, with paper underneath, it will be warm enough for any fowls anywhere. I should put windows once in 10 or 20 ft. on north side, for ventilation, but all such should be supplied, in this cold climate, with shutters for winter use. There should be a large door, say 3½ or 4 ft. wide at each end of the building, and these doors should have outside shutters or double doors, and all east windows or west windows, should, in a cold climate, have shutters or double windows for winter. I put up shelves next the walk, at the end of the rooms, 2 and 4 ft. from the floor, between the door and roosts, to set the nests upon and open out of the walk into the nests. A narrow shelf is placed opposite the lower nest shelf, to set the water cups on (pint tin cups are the best); and below this shelf, or two feet from the floor, is a matched board partition, and the bottom of the doors should be boarded, so that if a cock gets into the walk he can't fight the others. The roosts are on the side of the rooms from the walk to the south side of the building, and the opposite side of the room from the door. I have a narrow shelf, say 6 inches wide, and 10 inches from the floor, on the side of the room where the door is, to feed soft feed on. All dry feed is scattered into the runs and on the floors of the rooms, that are always covered with some kind, or all kinds of litter. I have a tight partition between the rooms, 4 ft. high, and the roosts are 2 ft. or 3 ft. from the floor, so as to avoid draughts of air at night. A chimney is made in the west part of the house, 12 ft. from the end, and in the middle of the building. It is convenient to have a stove in the lower part, to cook food, heat water, etc., in winter, but I have never used it to keep the house warm.


THE POULTRY HOUSE OF F. H. KINNEY, ESQ., WORCESTER, MASS.


THE POULTRY HOUSE OF W. C. TRACY, ESQ., TOWANDA, PA.—(*See page* 370.)

There is a chicken room, 12x20 ft., in the west end up-stairs, where I keep a stove for the comfort of my winter chicks. Stairs are at the east end, and the 2nd story is divided in the middle by a walk, 3 ft. wide, with rooms 8 ft. square on each side; these will each accommodate 12 breeding hens in winter, and 6 in summer. For laying purposes, I should keep more. The upper story, or attic, makes a very comfortable pigeon loft, and my Homing Antwerps, and English Carriers, enjoy themselves there, and breed to my entire satisfaction. My Calcutta Fans are kept in another building with the rabbits. People, wise in some things, are constantly saying and writing that hens must have abundant room out-doors, or they will not do well. It is not so with my Brown Leghorns. I have a score of hens over 6 years old, that never have run out an hour in their lives, and are hearty and well, and lay nearly every day for 10 months of every year. Their average, for two years past, being over 200 eggs each a year, and most of the eggs they have laid have been set and hatched.

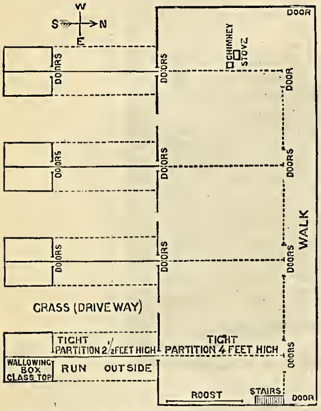


Fig. 2.—PLAN OF MR. KINNEY'S POULTRY HOUSE.

Among the Farmers.—No. 21.

BY ONE OF THEM.

Green Fodder Crops.

The subject of green fodder crops, and the almost identical one, of how to keep up the flow of milk during our hot dry summers, when we have them—and we do have them four years in five—comes up at this season, and is an interesting one at all times, and to people in all parts of the world. In so exceptionally moist a summer as the one we are just bidding farewell to, everything grows most rampantly, and we can not so well judge of what the new things will do in dry times. The breadth of

Fodder Corn

put in last spring, was unusually great, because so much of the grass and clover sowed last year was burned out, and we were obliged to make provision for hay. On this account the problem is presented with peculiar force, how to cure and preserve it. I hope very much that

The French Silo, (Tanking System).

will be thoroughly tried by many farmers this season. This has been repeatedly described in the *American Agriculturist.* Goffart's experiments, or rather his experience in France, demonstrate that in that climate there is no reason for failure, either in tanks or trenches, if, as he says, the fodder is only cut fine enough and well tramped down. I can not believe that the experiments which were made by some of the members of the Elmira Farmer's Club, or at least promulgated by the Club, were conducted on a fair understanding of the necessities of the case. It is perfectly clear to my mind that nearly, or quite, water tight pits or tanks, (silos), by means of which the air may be almost perfectly excluded from the contents, will preserve corn-fodder as well, to say the least, as barrels will preserve *kraut.* The cases are very similar. To make sauer kraut, (and a most delicious way this is of preparing cabbage for the table), the Germans slice the firmest cabbage heads very fine, and pack the fine cut cabbage in barrels, sprinkling a little salt over it in layers, with sometimes a few caraway seeds. A weighted follower, fitting as closely as possible, is put on, and the barrel covered up. Fermentation sets in; this, by the formation of carbonic acid gas, excludes the air, and soon nearly arrests the fermentation. The very little air which may be present after the general exclusion of air from the mass, which follows the first working, is sufficient to equalize the action, and render the whole homogeneous—that is, about equally acted upon.

Mr. Goffart's pits were six feet wide, and of equal depth; they were dug in a tenacious water-tight clay soil, lined on the sides and bottom with bricks laid in cement, although this brick lining was found not to be essential. These tanks or pits were of indefinite length, and at the proper time, before the formation of the grain, the corn-stalks, or, as we should say, the fodder-corn, was cut and run through a powerful stalk cutter, operated by steam-power, cutting the corn in pieces about one-third of an inch thick. This was of course quite juicy and wet, so much so that it could not be trampled down well without an admixture of straw to absorb the water. He used rye straw, and the quantity never exceeded one-fifth of the whole mass. Thus mixed, it was trampled down as hard and level as several men could tramp it, filled 20 inches higher than the top, the upper layer being well salted. Then a covering of straw was placed over it, and 20 inches of earth. If not cut fine, the fermentation and steaming is tremendous, as also the settling of the mass in spots. When sufficiently finely sliced, however, the action is gradual, every particle of the material, rye straw, and the coarsest buts, become fit for food, and are greedily eaten; virtually supplying an abundance of nutritious green-fodder, equal, if not superior, to corn-fodder in its best estate. I am not situated so as to try this very well, but hope that farmers who can do so, will give it a thorough trial.

We have had so much rain up to the middle of August, which is the date of writing, that very little of the corn-fodder has been cut for summer use, and the growth of it has been superb, leafy, succulent, and green, even on poorly prepared ground, and the same is true of field corn, so that we may well anticipate a supply of fodder such as we rarely have to store. My own preparation for a dry summer, consisted in sowing

Golden Millet

as well as fodder-corn. This was sowed in May and in July. Some upon good ground, other upon quite poor land, with and without manure. I am much pleased with the crop, my anticipations being fully realized on good ground. It is a strong growing crop, from a very feeble beginning. The seed, no bigger than "a grain of mustard seed," needs more careful sowing than we gave it; on some parts of the field it came very thick, on others, though apparently evenly sowed, it came very sparcely, giving too good a chance for the weeds to come between. It does not tiller or sucker; where thinly sowed, or where it comes sparsely, so it stands. After it gets a start, especially when it begins to feel the hot weather, it sends down strong feeding roots, which become very fibrous, and brace, or rather "stay" the stem on every side, holding it erect through the hardest blows we have had so far. The principal leaves measure an inch to an inch and a half in breadth, and 16 to 20 inches long, when the plant has attained its full growth in good soil, and the burden of green-fodder at the time I write, seems fully equal to that of sowed corn. Everything eats it, and yet it is not sweet like corn. I am afraid, besides, that the straw will prove very hard, and will be refused by stock. It seems so now, though green and not over one-fourth to one-third of an inch thick. Hungarian grass never made a stand at all equal to it for weight of crop, though no doubt the quality of the Hungarian is decidedly superior for hay.

Prickly Comfrey.

Of course I made a little trial of this new forage plant last spring. The troublesome thing with it, thus far, is the starting. The root cuttings were quite small, and many were somewhat dried. I think the parties dealing in them, lacked experience as to how best to transport and deliver them, and that those receiving them needed more definite instructions how to handle them. I am confident that any scraps of root, even those not worthy the name of root cuttings, and of course any pieces of root such as it would be proper to sell, if simply thrown, when fresh, upon the ground, and covered with a little damp litter, will every one of them start and make a plant. If once dried, a great many are lost; only the fleshy ones, which do not lose the freshness of the surface, live. The cuttings, therefore, ought to be kept damp. But, if fresh cuttings are put up so as not to dry at all, such succulent things, in which the tendency to bud and grow is so strong, will surely *heat,* and that is just as fatal as drying; so the dealers are in a straight, and they must find their way out of it. The only way which suggests itself to me is, that started cuttings be shipped upon long journeys, for there is more tenacity of life in a plant with such a store of nutrition as the cutting affords, than in the cutting in which no individual life has as yet asserted itself. As fodder I can only say of the Comfrey that cows seem very fond of the leaves, and there certainly are plenty of them. Pigs eat it also, and the amount of forage which will grow upon an acre of land, seems to be limited only by the amount of manure which can be brought within feeding distance of the roots.

Cow Jockeying.

"There is cheating in all trades but ours," so runs the ancient saw. If one wishes to buy a trotting horse, he expects to hear him extolled as taking a three-minute gait as a natural jog—and trotting "low down in the thirties," if urged—as being able, with training, to "do his mile in thirty," or "twenty-two and a half," as the case may be, but the test is easily applied. The horse is hitched up to the road-wagon, and made to show his speed on the road, or on the track, *by the watch.* That settles the matter of speed. If every other point could be determined as accurately, there would be little complaint of the jockeys. I am led into this train of thought from a talk I had with a gentleman, who has gained no little fame among horsemen from his study and comparison of pedigrees and performances of trotting stock. He is perhaps better known as "Hark Comstock," than as P. C. Kellogg.

Mr. K. has taken quite a fancy to Jersey stock, and would probably buy a few good cows, if he could know what he was buying. Said he, "I want a well pedigreed cow *that somebody has held a watch on.*" That puts it in a nutshell. In horse-dealing nobody thinks of getting a big price for a trotter that has not been *timed,* but our cow-dealers brag about their milk and their butter, about the pedigrees of their cows, and they test their entire herds together, or make some positive tests, and publish, not the weights, but an *estimate.* Now, a horse never gets "a record" by his owner's watch, and it is not fair that a cow should. It is time for us to stop talking about jockeying, as if it were something peculiar to horse-dealers. I am beginning to think that the cow-jockies can give the horse-jockies several points, and beat them at that. They certainly could, if horse buyers were as credulous as those who pay the big prices for milk and butter cows—especially for Jerseys. Now and then a cow is brought to a fair test. In a few herds, cows are systematically tested, and the whole process is open to the inspection of those who are curious. A few dealers are really anxious that a buyer should know all about a cow which he buys, and will have her milk weighed, her cream exhibited, and several milkings saved, to be churned before the buyer, and to his satisfaction, but they are far between.

A curious case came to my knowledge the other day. A gentleman was anxious to buy two or three Jersey cows, and went about among the breeders. In one herd he found a heifer to suit him, and her owner readily consented to have her milk weighed, and set by itself for a week—or perhaps for seven milkings. She yielded some nine pounds and over, which for a two-year-old heifer is good enough. He found another cow or heifer, which he liked, in the herd of rather a prominent breeder—one who might be called a professional breeder. To him he wrote a pleasant letter, asking if a similar test might be made, and the reply which he got would have been amusing, had it not been almost insulting.

If a cow be offered for sale, without pedigree, and without any claim for her that she is worth more than she shows for, she will bring $35 to $60 —if she has a fair udder full of milk, and is more or less well formed and healthy. A cow worth no more intrinsically, will readily sell for $10 to $40 more, if she have the appearance of a full blooded Jersey. If a pedigree, presumably true, be presented, showing more or less careful breeding, this adds to her value. If the same be in the Herd-book, this establishes, in the minds of many, her claim to thorough breeding, and still further increases her market value. However, as a *butter* cow, her value is not for beef or milk, but for cream and butter. Her thorough breeding, if she do not make much and good butter, is *against* her, rather than in her favor, for who shall say that the *not* yielding of butter is not inherited from her direct ancestry, unless there be records to the contrary.

When a man wishes another to pay him three—four—five hundred dollars for a cow, he is in honor bound to show that she is worth the money, or, *if he sells*, he has a fool for a customer.

We are gradually working towards milk, cream, and butter tests, as establishing the value of Channel Island, Ayrshire, and Dutch cows, but encounter the difficulty that each man, so to speak, "holds the watch" on his own cow, and men of the most elastic consciences have the best story to tell, the best figures to show, and very likely, for a time, get the highest reputation for their stock, at least in certain quarters. The number of customers, who wish "somebody to hold a watch" on cows they buy, is increasing, and it will give sellers trouble to satisfy them, but still greater not to, I reckon.

The Tilden herd were, and are, systematically tested by weighing the milk of each cow, on one day in each week, morning and evening, and having one or two cows tried for butter every week, by setting the milk by itself for seven consecutive milkings, skimming all but the last, which, when it is 12 hours old, is churned with the cream. The butter obtained is that for half a week, and the experiment is sometimes repeated the same week, and with the two results one is more likely to come at the truth, than from any single result.

It is much more important, in a simply money making point of view, that every owner of a herd should know just how much milk each of his cows gives, and how much butter she yields, than that the indefiniteness of his knowledge, and his favorable *estimates* of their prospective performance should enable him to get higher prices from deluded customers, than he otherwise could.

Talks on Farm Crops.—No. 8.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"Seasons," said the Doctor, "vary, but the climate does not change. We have what we call wet seasons and dry seasons, early seasons and late seasons, cold seasons and hot seasons, good seasons and bad seasons, but the climate of a country does not change. It may be modified in some slight degree by the growth or removal of belts of trees, or by draining, but still the great fact remains, that the climate is practically and essentially the same year after year, and century after century."

"You make a distinction," said the Squire, "between season and climate."

"Yes," said the Doctor, "and it is one which should be borne in mind. In sailing for a series of years across the Atlantic, you will have good voyages and bad voyages. You will have storms and calms, favorable winds and unfavorable. But no one supposes that the Atlantic is more dangerous now than it was in the days of Columbus. The annual voyage of the farmer is sometimes favorable and sometimes unfavorable. In other words, he experiences good seasons and bad seasons, but the climate is no better and no worse than it was when the pilgrims landed at Plymouth Rock. The farmer sets sail with a crop of wheat. He hopes for a good voyage, but if he is wise and prudent, he prepares for a bad one. He knows from experience where the danger lies. Drouth at seed-time keeps him becalmed for days or weeks before he has fairly reached the ocean. And when the rain comes, it may come with a flood and threaten to swamp him. If his land is drained, or properly furrowed, he can weather the storm. It will drive him on his voyage and he will have plenty of sea-room before winter overtakes him. This part of his voyage, during the winter and early spring, is not unattended with danger. He may have too much snow or too little, but he has thought of this and taken all practicable precautions. Then the warm days and cold nights of early spring, the blowing and the freezing, the thawing and the heaving, assail him. The winds are sometimes contrary and again favorable. During this part of the voyage he is seldom long becalmed. He makes rapid progress. It may be backwards or forwards, as the winds are favorable or unfavorable. If favorable, the warm days and genial showers of spring will soon come to cheer and strengthen him. The hot sun will not find him lying like a log on the ocean, with 'water, water everywhere, but not a drop to drink.' He is well on his journey, and can stand a calm or a drouth."

"All very fine," said the Deacon, "but yet, even when within sight of land, or just as the wheat is ready to cut, a hail-storm may prostrate his crops and blast his prospects, or when just entering the harbor and his arrival has been signaled, and the newspaper writers and editors, and the Chief Clerk of the Department of Agriculture, one and all, have become jubilant over the unprecedented harvest, a week's warm rain may spoil the whole cargo!"

"True, Deacon," said I, "but yet, to continue the Doctor's rather mixed metaphor, the chances of a good voyage are just as favorable now as they ever were—in fact, better, because improved agriculture, like steam on the ocean, makes us less dependent on the winds and rains and weather.

"In 1855, we had a good crop of wheat in this section, but just as we were commencing harvest, it began to rain, and rained more or less, but principally more, for a whole fortnight, until the wheat sprouted in the shock, and as it grew, standing in the field.

"In 1856, our wheat crop was comparatively a failure. The seed sown was poor and came up weak, the weather was unfavorable, and the crop poor and late, and the midge did serious damage. Farmers were greatly discouraged, and it was generally thought that wheat culture in Western New York must be abandoned."

"Yes," said the Doctor, "I recollect it well. They thought the 'climate had changed.' And yet that same year, when many farmers did not get much more than their seed, E. S. Hayward, who had been in the habit of drawing manure from the city, and had got his land in high condition, had a noble crop of white wheat, averaging 35 bushels per acre. He had begun to use steam, and was no longer entirely dependent on sails. Like others, he experienced bad weather, but he got his ship safe to land, and his cargo found a ready market."

"Now," continued the Doctor, "we have just harvested a noble wheat crop in Western New York, and farmers think the climate has changed for the better. Not a bit of it. We have simply had a favorable voyage. We shall have good voyages and bad voyages as in the past, and no farmer should be tempted to set sail without due precautions. There are farmers who must continue to depend on the wind alone, availing themselves of all that science and experience have shown to be favorable to safe and rapid progress. There are other farmers who can use steam."

"What do you mean by using steam?" asked the Squire. "It is cheaper to use wind and water."

"Exactly," said the Doctor, "but they cannot always be depended on. They are good in a favorable season. What I mean by steam is anything which makes us less dependent on the weather. It may consist of

1st. The *better preparation of the land.* Such as, *a*, underdraining; *b*, thorough working of the soil before and after sowing and planting.

2nd. More and richer manure. This means, *a*, better stock and the use of extra food, such as bran, malt-sprouts, grain, oil-cake, cotton seed, etc.; or, *b*, artificial manures; or, *c*, and better still, both extra food and artificial manure. The two together are often better than either alone.

"Underdraining, the thorough preparation of the land, and the use of plenty of manure, will furnish steam for the agricultural ship."

"And now," continued the Doctor, "when we have converted the sailing vessel into a steamer, the question comes up, how shall we use the steamer so as to pay for the extra expense? What kind of freight shall it carry? A steamer can rarely be used exclusively to carry coal, iron, stone, bricks, guano, and other heavy articles, that will keep for any length of time. She must be used to carry fruit, meat, and valuable articles of merchandise—something, in short, on which the shippers, in consideration of the extra saving in time and risk, can well afford to pay higher rates of freight."

"And so on the farm in high condition, where the soil is drained, and clean, and mellow, and heavily manured, must we use the land, at least in part, we must raise the more valuable class or kinds of produce, such as *a*, improved stock, for the double purpose of meat and manure; *b*, choice fruit; *c*, good vegetables, such as onions, cabbage, peas, beans, sweet corn, tomatoes for canning, etc.; *d*, the best varieties of wheat, barley, oats, peas, beans, potatoes, etc.; *e*, clover and grass seed, or seeds for the farm and garden."

"There is no law," continued the doctor, "compelling a farmer to raise nothing but standard crops. This is a free country. There is room enough for enterprise, and many opportunities to engage in new and profitable branches of farming."

"All very true," said I, "but for a few years past those farmers who have raised what you call standard crops, have made more money, or at any rate lost less, than those engaged in market gardening and seed-growing. Henderson's 'Gardening for Profit' has done much to increase the number and skill of our market gardeners, while the general depression in business has greatly lessened the demand for their produce, and reduced the profits."

"That may all be," said the Doctor, "but it does not affect the question. The real point with the farmer, who has made up his mind to raise a certain crop is, how to raise it at the least cost, and to the best advantage. Now, if we are going to raise corn, it might not pay us to buy manure for this crop. But if we are going to raise onions, we certainly will not get a profitable crop, unless we make the land unusually clean and rich. And so in regard to cabbages. You raised this year 10,000 Early Wakefield cabbages. You sold what you could, and fed what you could not sell to your stock, and you have a lot of late cabbages that you will use in the same way. It looks to me, as though it was a profitable branch of farming. But you certainly could not adopt it, unless you made or bought a considerable quantity of manure. Then take your Northern Spy apple orchard as another illustration. A few years ago you had a good crop, when most orchards failed, and you sold the crop from four acres for over $1,200. You have had fair crops every year since. You had a crop last year, like all the rest of us, and you have a crop this year, when few other orchards are bearing. And the only reason for this is, that you manure the orchard very liberally. In other words, you use steam, while the Squire still sticks to the good, old-fashioned sailing vessel. He had a big crop last year, but this year not. And, if I mistake not, your apples this year will bring in far more money, than all the manure you have used on the orchard for the last ten years has cost."

"Yes," said the Deacon, "and you have had a grand pasture for your sheep besides."

"True," said the Doctor, "and that is not all. This pasture has been green, when all the other pastures on the farm were burnt up. When the sailing vessels were becalmed, the steamer held its way! And this is a great point gained. Our dairymen know the importance of having something to keep up the flow of milk when the pastures fail. They know that, if the cows are allowed to shrink in their milk, good after-feed will do little to restore the flow. And they can afford to pay an extra price for a little extra food for a few weeks, until the fall rains restore the pastures. And what is true of cows," continued the Doctor, "is equally true of well-bred sheep and lambs. Common Merino sheep, kept principally for their wool, will suffer comparatively little from a few weeks' scanty supply of food. They grow slowly, and can live on their fat. But if you have a lot of lambs that you want to average 100 pounds each at five months old, there must be no falling off in the supply of food. It is the weakest link that determines the strength of the whole chain. And when you are trying to improve a breed of animals, the measure of your success will be determined by the rapidity of growth during the greatest period of scarcity."

"That, Doctor," said I, "is pushing the idea to an extreme, but there is much truth in what you say. And I am satisfied that one of the principal aids of a good breeder must be to keep up a steady supply of nutritious food. He can not depend on 'nature,' or, as the Doctor puts it, on sailing vessels. He will have to use steam occasionally, and not trust solely to the wind. He will need more or less green food in winter and early spring, and he will have to provide against a scarcity of grass during the drouth of summer. He will raise mangel-wurzels and cabbages, and have some pasture so rich that the severest drouth hardly affects it. To do this, he must use manure liberally."

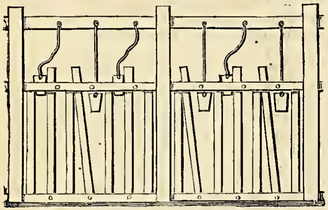


Fig. 1.—SOUTH CAROLINA STANCHION.

"Yes," said the Doctor, "and then he will make more money in a bad season than in a good season. I once had a friend, who sailed from New York to Liverpool in the 'Dreadnought.' The sails were never changed, and the passage was made in 12 days and 12 hours. Now, if we could be sure of such steady wind and weather, the steamers would not pay; and if we had always favorable seasons, there would be no profit in high farming. But the good seasons are the exceptions, and the bad seasons the rule. This has always been so, and always will be so. The climate does not change. And he is the wise farmer, who fully realizes the fact, and makes provision accordingly."

Hints and Helps for Farmers.

Cattle Stanchions.—"W. W. L.," Charleston, S. C., sends a drawing of stanchions for fastening cows. He writes, "I am now milking sixty head, and not one has ever got loose. I hope it will be of use to some one. My farm is on James Island. The device shown by my sketch, (fig. 1), consists of wedges hung by cords to the upper beam over the stanchions. When the stanchions are shut, they are held by the wedges; when they are open, the wedges hang down, as shown in the engraving."

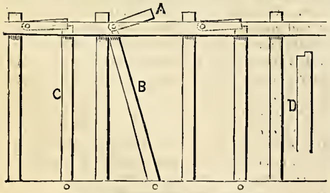


Fig. 2.—WISCONSIN STANCHION.

"F. J.," Greenfield, Wis., also sends a drawing of stanchions and latch, figure 2, which is in use in his part of the country. He says "It seems to be preferable to that of T. G., described in July *American Agriculturist*, being less expensive and more secure. The latch, *A*, is simply a piece of board fastened at one end with a pin or bolt, while the other end is free, and drops down when the movable bar, *B*, is swung to an upright position, as shown at *C*. In order to prevent the possibility of any animal being burned alive in case of a fire, I have invented an affair (fig. 3) by which I can loosen all of the cattle in my stable at once. I find it is a great convenience in doing the every day chores, as well as being a protection in case of a fire. The attachment is the cord, *A*, which passes over the pulleys, *B*, *C*, *D*, and is fastened to the weight, *E*. From the end of each latch there is a small cord, *F*, which is attached to the cord, *A*. To loosen the cattle, take hold of the cord at *A*, and pull it down about six inches. This lifts all the latches, and the stanchions are so hung that their own weight swings them open. The weight, *E*, draws the cord back to its original position, and each stanchion may be closed separately. The only use of the pulley, *C*, is to prevent too much sag in the cord.—I have lately put up an anti-tail switcher, such as was described in the columns of the *American Agriculturist* several years ago, and I find it very effective in use."

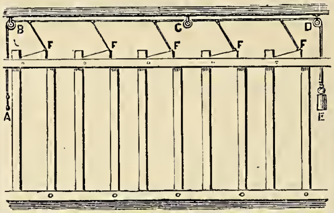


Fig. 3.—ARRANGEMENT FOR OPENING STANCHIONS.

Method of Tethering Animals.—"F. S. C.," Painesville, Ohio, wants a plan of tethering animals safely, so that the rope or chain will not lap around the post. We give an illustration of a very simple one, that may be made of a short post and a piece of plank. Take a piece of hard wood plank, bore a hole at each end, and a two or three inch hole in the middle. Procure a stout post three inches thick; cut down six inches of the top to two inches thick, put an iron ring around the top, and bore an inch hole three inches from the shoulder. Make a pin to fit this hole. When used, drive the stake or post in the ground; put the swivel plank on to the top of the post, and fasten it by inserting the pin into its proper hole. Then fasten the tether to one of the holes in the swivel, which is moved round as the animal travels. The contrivance is shown at figure 4. Some other tether fastenings were described in the *American Agriculturist* for Aug., 1876.

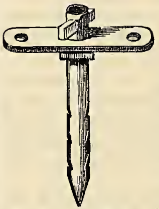


Fig. 4.—TETHER PIN.

Post-Hole Digger.—"R. F. W.," Galesburg, Ill., sends an illustration (fig. 5) and description of a post-hole digger. He writes, "I have now in my tool house a post-hole digger made for me ten or eleven years ago, similar to the one described in the *American Agriculturist* for May, 1877, except that the handles cross each other, instead of being brought together to close the blades. This I think is better. It is my own invention, and is free to everybody so far as I am concerned."

The Value of Leaves.—When the trees are shedding their leaves, it is time to consider the many uses to which the litter of the woods may be applied. Everybody knows the value of what is called "woods earth"; how plants flourish, and how the flowers bloom in it, and how wheat, corn, and potatoes thrive in newly cleared ground. "Woods earth" consists largely of rotted leaves, and one use of the leaves, which are spread here and there by every October blast, is to make a most valuable fertilizer. In reducing these leaves to a proper condition for manure, we can turn them to another useful purpose. Nothing makes better litter than leaves. They may be used in the horse-stable, the cow sheds, pig pens, and poultry-houses. For calves and brood sows they are very valuable. There is no danger that the young animals may become entangled in them, as there is with straw. Leaves may be gathered very quickly in open woods, or upon roads, or the borders of woods, by means of a hay rake. When gathered into heaps they may be loaded on to a wagon very easily, by using a large basket made by sewing sackcloth upon a hoop of a hogshead. A correspondent sends a hint in this direction, which will be useful just now. He takes two light, strong rods, some six feet long, and sews gunny cloth to each of them, as shown in figure 6. This sheet is turned down over a pile of leaves, which is picked up by drawing the rods close together beneath the pile, and the leaves may then readily dropped into a cart or wagon. A hay rake, with a few light fence boards fastened to the sides, is an excellent vehicle for drawing the leaves home. To keep them in good condition for use, they should be put under cover.

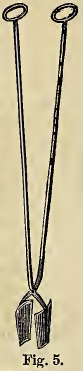


Fig. 5.

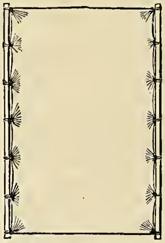


Fig. 6.—LEAF-GATHERER.

The Cooley System of Setting Milk.

For some time past different modifications of what is known as the Swedish plan of setting milk for cream, have been introduced into this country. Some time ago we described the Hardin apparatus, which consists of an ordinary tightly closed refrigerator, containing an ice shelf in the upper part, and a space beneath for deep cans for the milk. The melting ice not only cools the air in the closet, but the dripping cold water falls upon the cans and increases the cooling effect. In the method known as the Cooley system, a water chest, (shown at figure 1), and covered deep cans, (fig. 2), are used. The cans, twenty inches deep and eight and one-half inches in diameter, are quite submerged

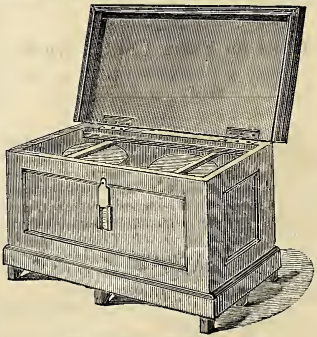


Fig. 1.—COOLEY'S MILK CHEST.

in the water in the chest, and held in place by the cross bars shown in the engraving. The covers are thus fastened down, and the air under the rims of the covers, prevents the passage of any water into the cans. The water coolers are lined with metal, and fitted with inlet and overflow for using flowing spring water. These coolers are built with tight covers, to exclude warm air and retard the melting of ice, when this is used to maintain a uniform temperature. A thermometer is inserted in the front of each cooler, in order that the temperature can be ascertained without raising the cover. This apparatus is very simple, dispensing with costly milk rooms, as but little space is required, and is thus well suited for small dairies where but one cow is kept. For larger ones, it is very economical of space, and costs very much less for pans than the shallow setting system. The temperature of the water in the coolers should be kept as near to 40 to 45 degrees as convenient. At this temperature all the cream will rise in twelve hours, so that cans for one milking only are required. The skimmed milk is then perfectly sweet, and no acid is taken up with the cream. There is also an advantage in the fact, that being perfectly sealed against access of air, no disagreeable odors can be absorbed by the milk. This is a very important point, and it permits the keeping of the milk in places where it could not be done under other circumstances without tainting the cream. The cans are provided with a sliding outlet, which may be set as far above the bottom as the cream is deep, and the milk is then drawn off through the outlet, leaving the cream undisturbed in the bottom of the can. For making the best quality of butter from the perfectly gathered cream, by this system, the oscillating churn, the Davis' Excelsior churn, shown at figure 3, is recommended. This contains no corners, floats, or inside gear of any kind; it is therefore very cleanly in its operation, and very easily kept in good condition. The peculiar dashing motion of the cream in this churn is found to produce a butter of the finest grain and texture, as there is no possibility of any rubbing or crushing movement, by which the grain is injured. The butter comes in grains, so that it can be readily freed from the buttermilk, or be perfectly washed by pouring cold water into the churn, and moving it back and forth a few times. A full description of the cooler, can, churn, and the methods of using them, so as to make "gilt-edged" butter, is given in a little pamphlet, issued by the manufacturers, the Vermont Farm Machine Co., of Bellows Falls, Vt. The pamphlet can be had on application to the above named Company.

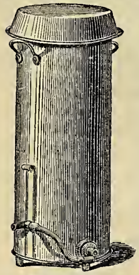


Fig. 2.—CAN.

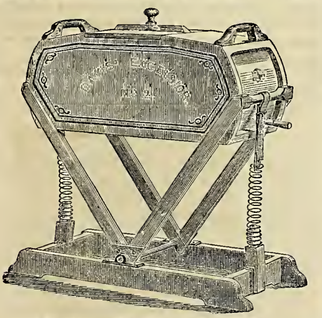


Fig. 3.—DAVIS' EXCELSIOR CHURN.

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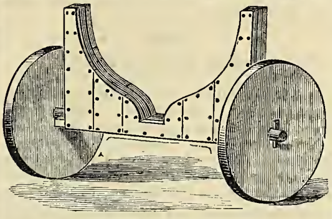
Exporting the Potato Beetle to Europe.—Last year we were too apt to smile at the fears of Europeans, that the Colorado Beetle might be exported from this country along with barreled potatoes. From our experience gained the present season, we consider this danger as very imminent. In harvesting potatoes, we find many tubers eaten into by the beetles, as well as by the larvæ, and hollowed out in some cases into mere shells. The cavities become filled with earth in the process of digging, and some of the insects are thus shielded from observation, really within the tuber. Though they were watched, we could not prevent numbers of beetles from going into the pits with the potatoes, and when these shall be removed into the cellar, it will require more than usual care to separate the then dormant beetles from them. It is hardly wise to expect in the shipping of potatoes, under ordinary circumstances, that extraordinary pains will be taken to keep beetles out of the barrels, or to examine the potatoes strictly. Consequently we may reasonably expect that thousands of beetles and larvæ (for we have recently seen eggs deposited upon potatoes, while they lay upon the ground, waiting to be gathered), to be sent abroad with potatoes. A year ago we thought differently, and stated our reasons; it is proper now to put our European friends upon their guard, that they may be extremely careful to examine both the potatoes that they import, and the packages they arrive in.

A Cradle for Drawing a Boat.

When it is necessary to draw a boat out of the water, a cradle should be used. This is very easily made out of some short boards and a piece of plank. The boards are cut to the pattern of the engraving, so that when three thicknesses are bolted together, the joints shall be broken and not come opposite each other. The cradle should be made to fit the boat tightly, midway between stem and stern, so that when it rests upon it, the boat will be evenly balanced and firmly held. The cradle is mounted upon two wheels, which may be made of hard wood plank. A piece of two-inch plank may be sawn out for the axle, and the upper part of the cradle firmly bolted to it. Such a cradle as this may be made light or heavy, and, if desired, may be furnished with iron wheels, so that it will sink in the water. It can then be run down under the boat, and that be drawn upon it. By hauling upon the ring-bolt in its stern, the boat can be drawn up out of the water, and easily moved on land.


CRADLE FOR A BOAT.

When it is desired to lift a boat out of the water, and suspend it in a boat-house, all that is necessary to be done, is to fix two strong hooks, or rings, in the top of the house, and a ring-bolt at each end of the boat. A pair of double-sheaved blocks is provided for each end of the boat. The blocks are hooked to the rings in the house and to those in the boat, which is then drawn up, one end at a time, alternately, until high enough. If two persons are in the boat, both ends may be hauled up at once. The loose end of the rope is fastened to the ring of the boat, or to a ring or a cleat at the side of the boat-house. Then the boat remains suspended. The inquiries of several are answered by the above.

Preparation of Sumach for Market.

Sumach is used for tanning morocco leather, dyeing, etc., and as the best quality brings a high price, (at present $112.50 per ton), there is much inquiry as to the possibility of utilizing the sumach which is so common in this country. There are not only several different species of sumach, but the quality, or amount of tannic acid varies greatly in the same species; the variation is due to differences in soil and climate, and is also affected by the methods of preparation. Of course the value of the product in the market depends wholly upon the quality. Thus we find quoted in the "Shoe and Leather Reporter," the journal devoted to the American tanning interest, the following quotations, viz., $115; $112.50; $110; $107.50 per ton, for grades of Italian, Sicilian, Spanish, and French, and $62.50 to $60 for Virginian sumach. The great difference between the extremes of these quotations, is owing in a measure to the careless method of preparing American sumach for market, through which much waste or refuse is mixed with the ground leaves and small twigs. Allowing for this defect, the price is regulated by the quantity of tannin contained in the sumach. The foreign article is the richest in this respect, having from 32 to 34 per cent of extract, and 16 to 16½ per cent of tannic acid. The best American contains more than half this quantity of tannic acid, but yet brings in the market only half the price of the foreign. Not all the American sumach is fit for the tanner's use. That only of a strip of territory comprising parts of Virginia, Tennessee, and Missouri, is rich enough to be available. Whether or not that of more northern localities will ever be sufficiently valued to become an article of commerce, remains to be seen. If by any system of culture, the American species can be so improved as to be of use in morocco tanneries, it may afford many persons employment in growing, cultivating, and preparing the plant for market.

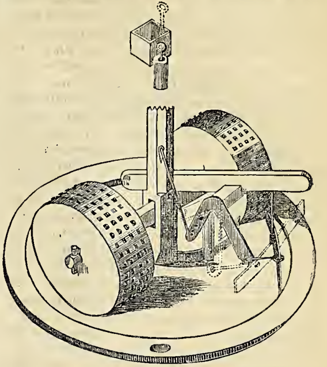


Fig. 1.—MILL FOR GRINDING SUMACH.

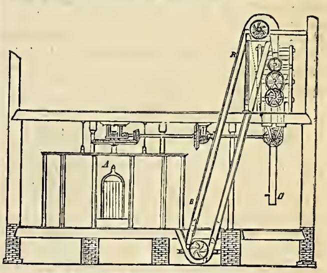


Fig. 2.—INTERIOR OF SUMACH MILL.

The species of sumach grown in Europe, is *Rhus Coriaria*. Those used in this country are the Staghorn Sumach, *Rhus typhina*, which has velvety branches, and grows 10, 15, or more feet high. The Smooth Sumach, *Rhus glabra*, by far the most common species, with quite smooth branches, and the Dwarf Sumach, *Rhus copallina*, with dark-green and very shiny leaves, are much smaller, growing from 2 to 8 feet high. The leaves of all these are compound, i. e., have 9 to 31 leaflets, or small leaves, arranged in pairs along a common leaf-stalk, or petiole, with an odd one at the end. The leaves and small twigs are gathered in July and August, when fully grown, dried in the shade, thrashed with flails or beaten with sticks, and then raked over to get rid of any too large branches. This work is generally done by the negroes and the poor class of white people. This partly prepared article is then sold to the owners of mills, where it is ground, sifted or bolted, and bagged for sale. When finished it is, or should be, a fine, light-greenish powder, entirely free from stalks and woody matter. The mill used for grinding, (fig. 1), consists of large stone wheels, shod with iron, which are make to traverse in pairs around a stone bed, upon which the half prepared sumach is spread. As this is ground it is scraped from the bed into spouts, by which it is conveyed to the sieves, or bolting apparatus somewhat similar to that of a grist mill. The scraper is arranged so as to change its position when it is desired to grind the sumach finer, by pulling up a rod by the handle shown in the upper part of the engraving. The mill is enclosed, to keep in the fine dust, and appears from the outside as at *A*, figure 2. The motive power of the mill is usually below, and works the elevator and bolts (*B*, *B*) by means of the gearing which is represented in figure 2. The finished sumach comes down the spout, *C*, into the bags in which it is packed for sale. These are gunny bags holding about 4 bushels. At the present time there is no encouragement for any person in this country outside of the localities mentioned, to go into this business, excepting in an experimental way to test the value of the product, and any cheap method of preparing the sumach may be improvised.

The Storm Glass.

An article or instrument known as a "Storm Glass" has been more or less in use for so many years, that it is difficult to trace its origin. It is a glass tube, 8 or 9 inches long, and about ½ or ¾ inch diameter, containing a liquid, in the bottom of which is a whitish sediment. It is claimed that the increase and motion of this sediment in some manner indicates the kind of weather to be expected. We had not heard of the thing for many years, until last winter, when inquiries concerning it came in great numbers, and we soon found that some one was offering this, or what is essentially this, as a weather indicator, under the name of the "Signal Service Barometer." Wishing to give an answer at once to our correspondents, we applied to a gentleman widely known for his knowledge of, and researches in, meteorology, for some account of it, and reference to some work which would give its history. The reply was, in substance, that the contrivance was very old, and the glass being quite worthless as indicating the weather, he had forgotton all about its origin. We then made two or three of the glasses, and soon after two of those made for sale came to hand, and they have been under observation for several months. Directions for making the "Storm Glass" are given in various works, and though the proportions vary slightly, they are essentially the same: 2½ drms. of Camphor are dissolved in 11 drms. of Alcohol, in a long tube like that already described, or an old-fashioned tall and narrow German Cologne bottle will answer. Then dissolve 38 grains each of Saltpeter and Salammoniac, in 9 drms. of water, and add this solution to the camphor solution, and shake well. The mouth of the tube may be closely corked, or a small hole may be made in the cork; we have not been able to see any difference in those closed either way. After a while, the upper portion of the liquid will become clear, leaving more or less sediment at the bottom. In looking up the matter, we found by inquiring of the proper officer, that no instrument of the kind was known in the U. S. Signal Service. Naming a storm glass, like the one described, or any thing resembling it, a "Signal Service Barometer," is calculated to convey the impression that it is used by the Signal Service, which is not the case, nor is it in any proper sense of the word a "Barometer." We have watched our various glasses, and find the sediment in feathery crystals, sometimes half or more filling them, and at other times occupying only an inch, or less, at the bottom. We had much sediment during perfectly mild weather, and little during the most fearful storms. One glass in the room would show perfect tranquility, while one outside, but a few feet off, would indicate great commotion, whereas if the thing like the barometer, was affected by atmospheric pressure, there should be no appreciable difference between the two glasses inside and out. We noticed that the inside glass would, by much sediment, indicate a storm in the morning, but that after a few hours the storm in the glass would clear up, though the weather outside remained unchanged, a circumstance that we found to be not unconnected with the making of fires and the warming of the house. After some months of daily observation, during the most changeable season of the year, we could not find that it indicated anything except that in cool days there was more sediment than in hot ones, and since hot weather has set in, no matter how fierce the thunder storms, the glass maintains the utmost composure—still, if one wishes to get up a storm to order, in a hot July day, he has only to set the thing in the ice box; there will soon be a great commotion of the elements—inside of the tube. That some times the disturbance within the tube may take place at the approach of a storm is very probable, as a change of weather is often accompanied by a lower temperature, but so far as we can see, the change in the contents of the glass are entirely due to the fact that the solubility of the materials is affected by a slight change in temperature; when it is cool, crystals form, and appear as feathery clouds in the liquid, but as soon as it gets a little warmer, these crystals dissolve again. The storm glass is, in our opinion, of no use whatever as indicating what the weather will be, nor does it even correctly show what it is.

Storage of Corn Fodder.

A moderate estimate of the yield of corn fodder, would be one ton for every ten bushels of corn. The corn crop will this year doubtless reach at least one thousand millions of bushels. This would give 100,000,000 tons of fodder, worth for feeding purposes, *if well cured and saved*, at least $5 per ton. In the aggregate this is $500,000,000. This large sum could easily be made for the country out of the crop of corn fodder, by wisely saving, and economically using it. But no produce of the farm is so injured in the harvesting, and storing, or so wastefully used as this. At the present time we might consider how corn fodder can be properly saved. First, the corn should be husked as soon as possible, and the fodder firmly tied up in easily handled bundles or sheaves, which should be carefully set up in stooks, and these should be well tied at the top, and well spread at the bottom, so as to keep the inner part dry and well aired. In this state it will cure thoroughly in two weeks after husking, and will be then ready for stacking, or putting away in the mow. By using the ventilators, shown in the *American Agriculturist* for September, there will be no danger of mildew, and the fodder will come out of the mow or stack in the winter, bright and green, nutritious and digestible. The good qualities and value for feeding will have been much enhanced by early cutting, as already advised.

The Short-Horn Cow for the Dairy.

The period of excitement which has just passed away, has had the injurious effect of distracting attention from the advantages possessed by the Short-horn cow for the dairy, and has presented her as a fancy animal. It may be that during the past few years, cows of this breed have not been bred so much with a view to the dairy, as to their possession of certain points, and pedigree; and it has worked injury to them, that in every herd one might see "nurses" of other breeds employed to help bring up the calves. A cow that cannot support her own calf, has no excuse for existence, although her pedigree may be long and her form may be all that "fancy painted" it. There are some such Short-horn cows, but fortunately these are a small minority of the breed. As a rule, however, it must be acknowledged that we rarely ever find farmers' wives prejudiced in favor of the Short-horns. This is probably because their husbands have been induced to buy "a grand cow," having bulk only to recommend her, and to lose their own judgment as to the proper qualifications of a good milker, in admiration of the proportions of the animal, and in expectation of the fine calves she would raise. But, nevertheless, the pure Short-horn, sometimes, and the grade frequently, are excellent dairy cows, and in addition, have the valuable quality of quickly fattening for the market. That the Short-horn cow has a good record as a milker, may be seen by reference to the different volumes of the American Herd Book. Cows are there mentioned which gave 30 quarts, and even more, daily, for a length of time; and which made 2 and even 3 pounds of butter per day. There are herds of pure Short-horns, kept specially for the dairy. One in Herkimer Co., N. Y., owned by the well known dairyman, Harris Lewis, has a wide reputation. One of the largest, and most profitable milk dairies near the city of New York, that of Mr. A. W. Powell, of Unionville, N. Y., consists of grade Short-horns, and we know that the milk of this dairy is unsurpassed by that of any other cows. To make the Short-horn popular for the dairy, it only needs that breeders who have neglected the milking quality of their cows, should retrace their steps, and that this chief use of a cow, should be the first consideration in breeding, for a cow that is a poor milker, fails to give the larger portion of the profit she ought to be made to yield. It is no disparagement to any other breed, that the Short-horn should be held first as a milking, as well as a beef animal. It has its place to fill, in which no other breed can be so profitable, and the other breeds find places where the Short-horn could not be kept with profit. There is no reason why the Short-horn should not be made to deserve this reputation without exception, as now it only gains it in comparatively few instances. When breeders fully learn, as they are beginning to discover, that they must make their stock popular with farmers, and dairymen, before they find the best market and make their business the most profitable, then this will be done, but not before.

Cats and Moles.—During several years we have tried the various mole traps that have been offered, but never yet succeeded in catching a single mole. This year a couple of cats have taken up the matter, and without any instruction have proved themselves very efficient mole-catchers. They patiently watch the runs, and when the motion of the earth shows that a mole is passing, they dig it out with great rapidity. Every few days a mole is brought to the house, the cats appearing to know that they do good service, and wish it to be recognized. We have not seen them attempt to eat the moles, but they seem to catch them for the fun of it.

The "Echo Farm" Barn

A view of the barn of J. Ratchford Starr, of "Echo Farm," Litchfield, Conn., is given on p. 373. The building is laid out in the form of a quadrangle, enclosing a yard which is sheltered upon three sides, the other being enclosed by a fence with a gate. The internal arrangement of that portion of the barn occupied by the stock, is the feature which seems to us to be worthy of special notice. This is shown in the left hand side, in the rear of the main building, and runs at right angles with it. Attached to this part are yards in which the cattle may have exercise when not at pasture. The ground plan of this wing of the building is shown at figure 2. It is 191 feet long, and has an entrance hall at one end, and also a spacious carriage-room, 17 x 35 feet, through which the chimney, *A*, passes. The next apartment is the wagon-shed. Here is a large closet, (*C*), and a waste water pipe and reservoir, (*B*). The horse stable is next. This is 20 feet wide. It contains a feed bin, (*E*), a water tank, (*F*), and a hay shoot, (*G*). Then comes the root-cellar, 20 feet deep, with a solid stone wall around it, and furnished with double doors. The calf stable is next. This is furnished with 21 separate stalls, with a gutter behind each row. This stable is the most convenient and well arranged that we have yet seen in any farmstead. The calves are here provided with all the comforts which are furnished to the older animals. Each stall has its feed trough and tie, and the floor of the stable is kept perfectly clean and littered with white sand. The bull's stalls are next in order. Each of these is secured with a strong chain, hooked up in the rear, (shown by the dotted lines), and is furnished with feed boxes in front. Next is a sloping passage way, from the cows' stable in the main building. The floor of this passage is covered with cross slats for secure footing, and it serves as a means of access for the cows to the bull's apartment. The dotted lines in front of this and in others, represent slatted doors. The next apartment is a stable for the work oxen; the stalls in this are provided with hay shoots, (*H*, *H*). Beyond this is a manure cellar 135 x 40 feet. The cow stable is in a portion of the main building, and is a wide, roomy, light, well ventilated apartment. Here the cows are arranged in two rows, with their heads towards the wide feeding passage which runs down the center. Near by is a dressing room for the workmen, where washing materials and other facilities for the utmost cleanliness and neatness are provided. The use of these, as well as orderly conduct, and quiet, kind demeanor to the stock, are enjoined. A surprisingly beautiful sight is offered to the visitor who views the fine herd of Jersey cows tied in their neat, substantial, not to say ornamental stalls, and taking with easy deliberation and contentment, their moderate ration of roots and meal, which is given them just previous to milking. For the sake of preserving this perfect quietude, and its accompanying contentment, and preventing any nervous distraction, which might tend to disturb the cattle, and interfere with their milking, no visitors are admitted at this time of the day. Not only the structure and arrangements of the barn, but the general administration of this farm, shows the owner to be a thorough man of business, who is intent on making his business pay; and not one of show, who is desirous of mere popularity, or who farms for amusement. At this season of the year, when farmers have leisure to visit places worthy of note, it will be an agreeable and profitable thing for them to visit the pleasant town of Litchfield, and examine for themselves the barn here described, and the excellent herd which occupies it, not forgetting to gather a few hints as to the management of a "gilt-edged" butter dairy. The visitor will meet with great kindness and attention from Mr. Starr.

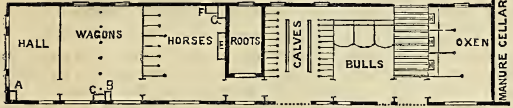


Fig. 2.—PLAN OF BARN.

* * *

Cisterns for Storing Rain-Water.

Several letters are at hand from Florida and other localities, where cisterns for water are found necessary or convenient, with inquiries about the method of constructing them. It is very important that such cisterns should be properly constructed, else the cost and trouble in making them may be lost. There are a few things to be determined accurately before a cistern is made; these are the locality, the depth, the form, the capacity, the material, the cost, and the manner of constructing and preserving it.

Where to Build a Cistern, and How Deep.

The locality should be such as will be convenient for receiving the supply of water, and also for drawing it for use, and it must, by all means, be either naturally so placed, that surface water can not enter it, or it must be made so artificially, by raising a low mound around it. The depth should be such as to maintain a proper coolness in summer, and prevent freezing in winter. The top of the cistern should therefore be not less than three feet beneath the surface of the ground.

The Best Shape for Cisterns.

The shape should be such as will give the greatest strength, with the largest capacity. Both of these are gained by using the circular form, both for the sides and the bottom and top. Where the greatest strength is required, as in loose sandy soil, an egg form will give this and with very little loss in capacity. The usual form is shown at figure 1. There is no better shape than this where strength is the first consideration. Where economy of space and material is desired, the form shown at figure 2 may be adopted. This is circular, and a circle encloses more space than any other figure having the same length of line around it. The top, if of brick or stone, should be arched, or if covered with timber and earth, the most durable kind of wood should be procured. In the latter case, the ends of the timbers should have a bearing of at least two feet on the earth at each side of the cistern, and should be bedded in cement, as shown at figure 3.

How Much will it Hold.—Table of Contents.

The capacity may easily be found by taking the diameter in feet, and multiplying it by itself, thus getting the square of the diameter. This is reduced to round measure by multiplying it by .7854, and cutting off the last four figures; a sufficiently near approach may be made by taking three-quarters of the square as the round measure. This gives the area in square feet, and for every foot in depth, the number of cubic feet contained. As there are 7½ gallons in every cubic foot of water, and 30 gallons in a barrel, the number of barrels contained in any size may be soon ascertained. By doubling the diameter, the contents are increased four times. Thus a round cistern 4 feet in diameter, will hold a little over 3 barrels for every foot in depth; if 8 feet in diameter, it will hold 12½ barrels for every foot; but if 12 feet in diameter, it will hold nine times as much, for if the diameter is enlarged 3 times, the contents are increased 3 times 3, or 9 times; and if enlarged 4 times, or to 16 feet, the cistern will hold 4 times 4, or 16 times as much water for every foot in depth. Thus a great advantage is gained by making the cistern as wide as possible. The following table will be found useful for reference.

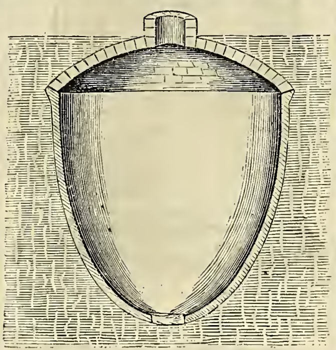


Fig. 1.—CEMENT CISTERN, ARCHED.

Contents of a round cistern for every foot in depth of

4 feet in diameter	= 93 gallons,	= $3^1/_{10}$ bbls.
6 " "	= 212 "	= 7 "
8 " "	= 375 "	= 12½ "
10 " "	= 588 "	= 19½ "
12 " "	= 848 "	= 28 "
16 " "	= 1500 "	= 50 "

The Best Materials for Cisterns.

Cisterns should be constructed of the most durable materials, and to preserve the purity of the water, these must be perfectly insoluble and unchangeable in it. Good, hard-burned brick, laid in hydraulic cement, or, as it is otherwise called, water-lime, because it will set hard under water, is the best material. The next best, or as good under some circumstances, is stone. Stone, however, being more bulky than brick, requires a larger excavation, and therefore costs more for labor. In the absence of brick, cement alone makes an excellent material, both for durability and cleanliness. Wood of any kind should never be used, as it quickly decomposes, and charges the water with poisonous substances, which produce fevers, chills, and diseases of the bowels and blood. More so-called "malaria," summer complaints, dysentery, and serious fevers of a typhoid character, are caused by using water charged with decaying vegetable and animal matter, than are produced from any other source.

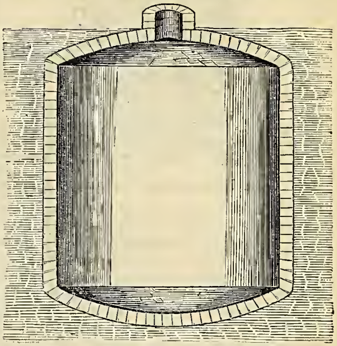


Fig. 2.—CYLINDRICAL BRICK CISTERN.

The Cost and Mode of Construction.

The cost will depend upon its size and the material selected. The expense of excavation may be estimated at 25 cents for a cubic yard, or one cent per cubic foot. This may be ascertained by the method already given for finding the contents of the cistern. The length of wall around a cistern may be found by multiplying the diameter by $3^1/_5$. Thus one 8 feet in diameter will be over 25 feet around it. 14 bricks will lay one square foot of wall, 8 inches, or one brick thick; 25 will lay a square foot, 12 in., or 1½ brick thick. Thus for every foot in hight, an 8-foot cistern will require 350 bricks, if the wall is one brick lengthwise thick, or 180 if it is a half brick thick. For a small cistern, the bricks may be laid in this manner, but those over 6 or 8 feet in diameter, should have an 8-inch wall to resist the outside pressure, especially if the soil is of gravel or sand. To lay 1,000 bricks, 2 barrels of cement will be required, if used clear; but there may be one barrel of sand used to one of cement, without danger of weakening the wall. Where expense is no object as compared with durability, we would use clear cement. Rosendale (American) cement is good enough for all purposes. Where the wall is laid up of cement, it should be made of such a thickness as will sustain the sides of the excavation perfectly well. But if the soil is solid clay or hard gravel, a two or three-inch wall will be strong enough; if the sides are of sand or loose gravel, the wall should be four inches thick.

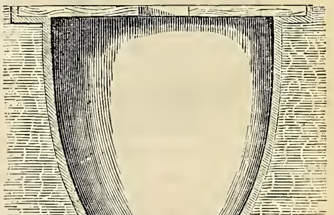


Fig. 3.—CEMENT CISTERN, COVERED WITH PLANK.

The manner of constructing the cistern is as follows: The excavation having been made large enough to allow for the thickness of the wall, the bottom is first covered with brick, or with a layer of cement; a flat stone is placed in the center to stand upon. If the cistern is of brick, nothing further need be done than to place a layer of cement smoothly and bed the bricks closely upon it, beginning in the center and laying them in circles with the outer ends further apart than the inner ones, and keeping the spaces equal and even. When the bottom is covered, cement is very thoroughly worked into the spaces with the trowel. The cement should be mixed so thin as to spread very easily. The wall is laid up in the same manner until the top is reached. The last few rows are laid so that the bricks incline, as shown in figure 2. If the wall is of cement, the bottom is first laid, and then as much of the wall as will stand firmly until it is set. When this is done, a thin layer of cement is laid upon the earth up to the top, just as a mason would plaster a wall. This will hold to the earth and soon set, and prevent loose sand from falling down. The portion of cement left to set, should be made rough and uneven at the top, so that a good joint may be made when the next is laid on. As soon as the first part is set, more wall may be built up, and so on until the top is reached. As this is reached, the wall should be made thicker, and the top should be beveled off, as shown in figure 1, so as to give support for the arch. In case of loose earth, which renders the excavation difficult to be made, the plastering may be begun at the top, and as one foot in depth is dug out, the side may be covered an inch thick with a coarse cement, made by mixing one part of hydraulic lime with four parts of coarse, sharp sand. This will confine the loose earth and prevent caving. A second coat of richer cement, and a finishing coat may be laid on, when the whole is dug and covered with mortar. After the rough wall is laid up, a finishing coat of clear cement, made very thin, is laid on, and when this is perfectly dry, a final finish is made, by washing the surface over with a thin wash of cement and water, laid on with a brush. This closes up all the cracks. If desired to have an insoluble surface, the wall may be, lastly, brushed over with a solution of water-glass (silicate of soda and potash); this combines with the lime of the cement, and makes a coating of silicate of lime, which does not flavor the water. This will form naturally, in course of time, from the cement itself, but it may be made at once by using the water-glass. One barrel of cement, mixed with two barrels of sand, will make 9 cubic feet of mortar, and this will make one foot in hight of wall 4 inches thick around an 8 foot cistern. Thus 12 barrels of cement and 24 barrels of sand, will be required to make the bottom and the wall of a cistern 8 feet wide and 10 feet deep, or holding 125 barrels of water. One extra barrel of cement will be needed for the finishing coat, and another with 5 barrels of sand, or half sand and half gravel, for the floor for the timber covering.

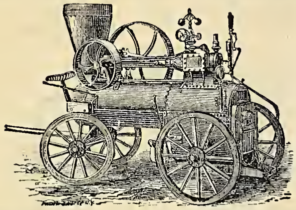


Fig. 1.—WHEELER & MELICK CO.'S PORTABLE ENGINE.

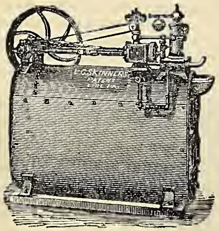


Fig. 2.—SKINNER & WOOD'S ENGINE.

Some Useful Farm Engines.

The increasing demand for steam engines that may serve the various purposes of the farmer, stock-feeder, and the mechanic, is gradually adding to the number of excellent machines brought to the notice of the public. There is much rivalry amongst manufacturers, to excel in all the most important points that may make their engines desirable to those who need them; consequently, while there is a great diversity in form and style, competition has tended to effect considerable closeness in regard to price, strength of construction, and economy in use, of all the best class of machines. Thus, in bringing to the notice of our readers, from time to time, whatever may be novel or of interest to them in other ways, we cannot say that this or that machine is the best; we notice the striking features of each, leaving the decision as to which may be most suitable for any particular work, to those most immediately interested. It may be useful to suggest, that as one buys a steam-engine to keep, and not change for a whim, he should select with the greatest care and deliberation, procuring catalogues and descriptions from each manufacturer, and deciding carefully as to that which will suit him best. There are some that excel for particular uses, or for their portability, others for their stability, some for economy of space, others for their low altitude, and all these and other necessary or desirable qualifications ought to be well considered. Figure 1 represents a portable boiler and engine, made by the Wheeler & Melick Company, of Albany, N. Y. The boiler of this engine is made of the best charcoal iron, and is tested to 200 lbs. pressure to the square inch. It is covered with wood, by which the heat is prevented from escaping by radiation from the surface. The crank pins, connecting rod, and other moving parts, are made of steel, and the boxes of composition metal. An 8-horse power engine of this make, has thrashed in a day of 8 hours, 36½ bushels of clover seed; 250 bushels of wheat with heavy straw in 3 hours, and 326 bushels of oats in less time. 600 pounds of soft coal, or a cord of 16-inch wood, is required for one day's consumption. It is made of 6, 8, and 10 horse-power. Figure 2 is a horizontal tubular boiler and engine, made by Skinner & Wood, Erie, Pa. All the heating surface in this boiler is below the water line, and every part of it is easily accessible for examination, cleaning, or repair. It has many appliances peculiar to itself, such as a "stop motion governor"; a combined check, stop and relief valve; self-oiling connection rod, and is safe, compact and carefully built. Figure 3 is the "Queen City Portable Vertical Engine," made by the Blymyer Manufacturing Co., of Cincinnati, Ohio. The engraving sufficiently illustrates this machine. Although solidly seated, it is easily moved from place to place by means of a truck or a wagon made for the purpose, as shown in figure 4. The engine is easily loaded on the truck, a few minutes work only being necessary. It is thus adapted to all the uses for which both portable and stationary engines are required. A gold medal was awarded this engine at the Alabama State Fair in 1876, the first and only time it has been placed on exhibition. Figure 5 is one of the many engines made by the Taylor Manufacturing Co., Westminster, Md. This firm manufactures more than *seventy* (70) different kinds and sizes of steam-engines; this fact is a guarantee that all the excellence of workmanship possible in a machine, can be secured with such extensive facilities as exist in this manufactory. This engine is called the "Clipper Vertical Engine." It is made either mounted on wheels or stationary, and with either wrought or cast dome and fire box. The cast dome and box, however, are recommended by the manufacturers, as out of 200 engines built, only one has been found defective on testing. Figure 6 represents the "Peerless Portable Farm Engine," made by F. F. & A. B. Landis, Lancaster, Pa. This engine is constructed with special care, to make it safe and effective in the hands of inexperienced persons, to take care of itself, in fact, as far as this can be done. The chief feature is the device to maintain cold bearings by means of a stream of water passing continually from and to the tank around the bearings, when the boiler is not needing a supply. The engine is placed on steel springs, and a brake for holding back when upon the road, is provided.

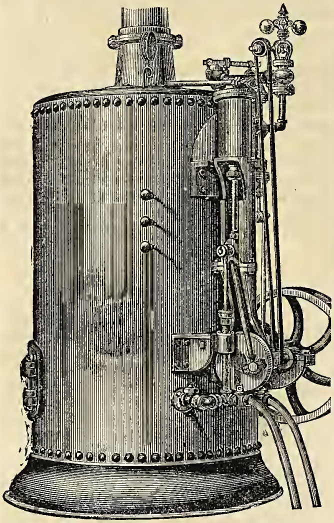


Fig. 3.—BLYMYER CO.'S VERTICAL ENGINE.

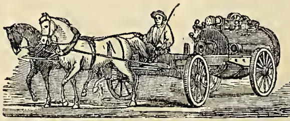


Fig. 4.—TRUCK FOR BLYMYER ENGINE.

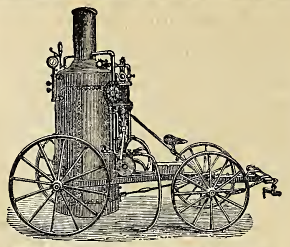


Fig. 5.—TAYLOR CO.'S CLIPPER ENGINE.

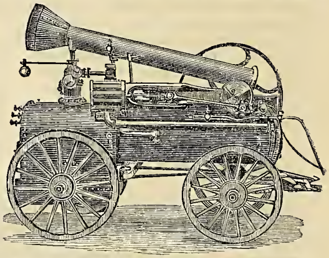
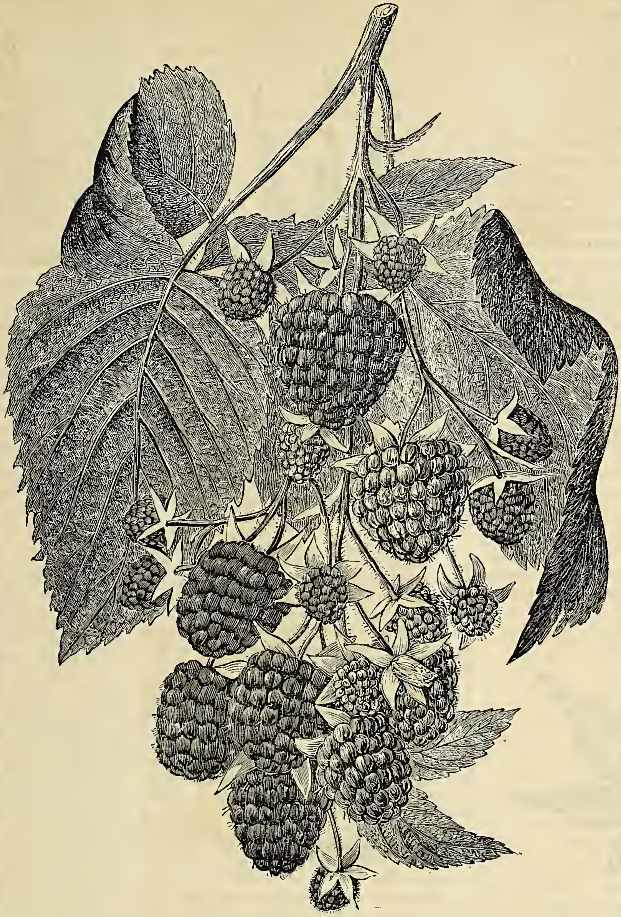


Fig. 6.—LANDIS' PEERLESS PORTABLE ENGINE.

Raspberries—The Newer Varieties.



RASPBERRY, "PRIDE OF THE HUDSON," FROM ACTUAL MEASUREMENT.

There is no fruit, the present status of which is so unsatisfactory as that of the Raspberry. In this statement we do not include the black and red non-suckering kinds, those which root only from the tips; they are derived from a different species, and ought to have a distinctive name. There are varieties of the Raspberry of the highest quality, but they lack in productiveness or hardiness, or both. The amateur who can afford a little extra labor, can protect his canes, but when this is to be done by the acre, it materially reduces the profits of the grower. Then there are plants perfectly hardy, like the Philadelphia, but when it comes to quality, they are to our notion quite too poor to be placed upon the table. The Raspberry is greatly influenced by conditions of soil, climate, etc., and all of us can recall varieties which, in the grounds where they originated, seemed nearly faultless, but are now scarcely heard of in cultivation. Those interested in fruit growing, are constantly on the look out for a Raspberry that shall be in all respects more satisfactory than any we now have, and any new one that promises well, is watched with great interest. Two varieties, the "Early Prolific" and "Reliance," originated by O. Felton, of Merchantville, Camden Co., N. J., were exhibited at the fruit shows of the Centennial. They were obtained from the "Philadelphia," after much selection and successive sowings of seeds from the best seedlings. Perfect hardiness, great bearing and good carrying qualities are claimed for it. These are popular in the Philadelphia market, and were commended by the Centennial judges. ....A new variety, called "Henrietta," was found as a chance seedling in the grounds of C. H. & J. H. Hale, fruit growers at South Glastonbury, Conn. Messrs. Hale are so well pleased with it, that they have set it largely to produce fruit for market. The new canes have a tendency to fruit the first year. Hardiness, productiveness, and excellent marketing qualities are claimed for it. From the specimens we have seen, this appears to be a variety of good promise....We regard the opinion of the commission men, who handle fruit, as of great value so far as the marketing qualities of varieties are concerned, and when one of such wide experience as S. B. Conover (Conover & Packer, No. 251 Washington st., N. Y.,) gives a variety high commendations, we feel sure that it has positive merits. He brought us this spring a number of baskets, just as they were received in the trade. The berries were remarkably fine and bright. According to Mr. C., this variety and the Antwerp are grown side by side, and the only difference that can be seen in the fruit is, that this is less downy than that, while the plant is perfectly hardy. This variety is to be called the Norwalk Seedling, and is in the hands of Messrs. Mallory & Downs, fruit growers, South Norwalk, Conn., who have grown it for some time for market, but have not yet offered the plants for sale. ....The new seedling "Pride of the Hudson," brought to our notice last year by E. P. Roe, Cornwall-on-the-Hudson, N. Y., has had another year of trial, and has thoroughly confirmed the good opinion formerly expressed. This is also a chance seedling, about the parentage of which nothing is known, it having been found in an old garden at Newburgh, where various kinds were cultivated. Mr. Roe has brought us fruit, and fruiting canes, at various times during the season, showing that the length of time it continues in bearing is something remarkable. During five years it has been without protection and has passed through the winters, which, in Mr. Roe's locality, are often of great severity, without injury. The individual berries are very large, often measuring 3 inches in circumference, and running very generally 2½ and 2¾ inches. Charles Downing says of it: "I regard it as the largest, finest, best flavored, and most promising red raspberry that I have yet seen."—Those who know the great care in forming an opinion, and the great caution in expressing it, that are characteristic of Mr. Downing, will feel very sure that a fruit must be of a high order to receive from him a commendation like the above. Those who are in the business of growing fruit have a sharp eye to the probable money value of a variety, and when so shrewd a cultivator as William Parry gives, as in the present case, a large order for plants of a new variety, we may feel sure that he sees merit in it. Doct. Hexamer, and Mr. J. T. Lovett, superintendent for A. Hance & Son, are among the nurserymen who have examined the "Pride of the Hudson," in Mr. Roe's grounds, and given it their positive commendation, while some of the leading fruit dealers in New York, speak in the highest terms of its shipping and other qualities, necessary to make a fruit valuable for market. The engraving here given is from a drawing made by Mr. Pope, of Newburgh, an artist, who is unexcelled in his delineation of fruits; in this case every berry was drawn from actual measurement, which has been carefully preserved in engraving. We must, as a matter of duty, enter our protest against the name of this raspberry, as we do against all other needlessly long names of all other fruits. There is no excuse for a name of more than two syllables.

Trees for Small Places—Japan Maples.

It is very often the case that trees, suited only to the road-side, or for the park, are planted in grounds too small to admit of a single large tree.

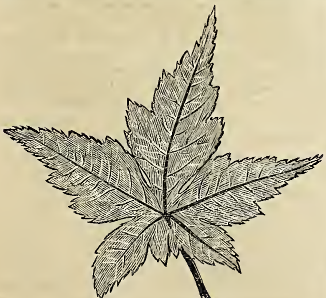


Fig. 1.—JAPANESE MAPLE.

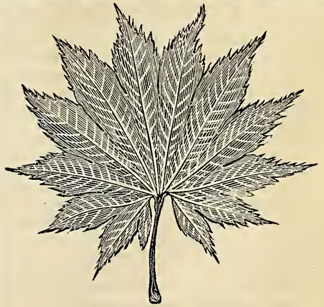


Fig. 2.—JAPANESE MAPLE.

In order to avoid the appearance of nakedness, numerous small trees are planted, the owner thinking that he can thin them in time; this he rarely does, but the trees grow up together, forming a thicket which is without beauty, and producing a shade so dense that nothing can grow beneath it. To plant a small area, even if it be only a village front yard, requires that some thought be given to a selection of trees and shrubs appropriate to the situation. The number of trees, both evergreen and deciduous, that attain only a moderate size, and present a pleasing outline, and beauty of foliage, has increased very much of late years, and there is now no difficulty in procuring a large variety of trees and shrubs suited to the decoration of small grounds. In a recent visit to the Kissena Nurseries, Flushing, (L. I.), N. Y., we were struck with the attention given by the proprietors, Messrs. S. B. Parsons & Sons, to supplying the needs of the owners of small grounds. They do not, of course, neglect the larger trees—indeed, they make a specialty of those suited for streets and avenues, but they seem to have brought together an unusual number of species and varieties of moderate growth. We shall have something to say about some of the less common and small evergreens at another time. Among the deciduous trees the most desirable for a small place are those, which by their flowers, or some peculiarity of foliage, invite a close inspection, and if those are selected which flower when quite small, they may by proper pruning of root and branch, be kept at any desired size. The difference between tree and shrub is not very well defined, and refers more to habit of growth than to size. There are some trees that may be kept in the form of shrubs; the Sorrel-tree, which in some of of the Southern States reaches 60 feet, will flower freely when 3 to 5 feet high, and may be always kept as a bush. The Japan Judas-tree, the Snowdrop-tree, (*Halesia*,) the Smoke-tree, the Fringe-tree, (*Chionanthus*,) and the Hawthorns, are other trees that may be made to adapt themselves to small places, and the list might be much increased. In view of the need of highly ornamental trees of moderate size, we especially welcome the new Japanese Maples, the introduction of which, so far as this country is concerned, is due to Mr. Thomas Hogg. There are numerous species of Maple in Japan, but what is called *Acer polymorphum* is especially given to variation, and its numerous forms have long been favorite trees with the Japanese, and their gardeners have discovered or produced a number with foliage presenting a great variety in form and color. As there is some doubt, as to what species these garden forms are derived from, there being evidently three or more concerned, it is sufficient for garden uses, to call them as a class "Japanese Maples," and we hope that they may become sufficiently popular to make it necessary to give the individual forms distinctive common names. One variety is catalogued as *Acer polymorphum dissectum roseo pictis;* this is descriptive, but can hardly be called handy as a name to use frequently. However, this is a matter that will cure itself.

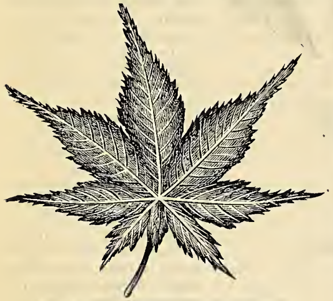


Fig. 3.—JAPANESE MAPLE, VARIEGATED.

These maples have passed into the hands of S. B. Parsons & Sons, who are now multiplying them as rapidly as possible. A wood engraving, while it shows the form, altogether fails to give an idea of the colors of the foliage of these remarkable trees. Some have all the season the rich tints which we so admire for a few days in autumn, in our own maples; others give the most delicate markings of green and white, others rose-colored and white, and when these colors are presented upon leaves so delicately cut that they appear like some costly fabric, rather than the foliage of a hardy tree, it is hardly possible to imagine anything more beautiful. It is an established fact that these trees are hardy, and another, that they can be multiplied with no great difficulty, and there seems to be no good reason why they should not become as popular as they are beautiful. Of course they can not be bought as cheaply as the common Red, or the Silver-leaved maples, but the prices at which they are offered are not so high as to place them beyond the reach of persons of moderate means. When one is beautifying the surroundings of his home, a work that once well done, is done for a lifetime, the difference in the cost between the choicest and the common, is not worthy of consideration. The engravings give some of the forms presented by the leaves of these Japanese Maples, selected with a view to show the extremes, from the most nearly entire, to the most finely dissected. Messrs. Parsons & Sons exhibited a set of these maples on the Centennial grounds, last year, but as with many other trees, the long continued drouth greatly injured their foliage, and they appeared to much less advantage than did those shown at the exhibition of the N. Y. Horticultural Society last fall, where they were one of the centers of attraction at that unusually fine display. They can be seen at any time during the growing season, in the nursery grounds at Kissena, and an inspection of these only, would repay any lover of fine plants for the trouble of a visit; but there are many other choice things to be seen there, about which we may say a word at another time.

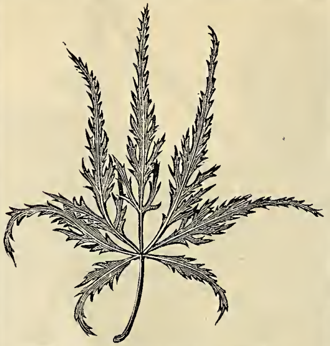


Fig. 4.—JAPANESE MAPLE, DISSECTED.

Notes from the Pines.

The "Notes" this time, though "from," are not *of* "The Pines." Some botanical work in hand, made it necessary to consult Doct. Gray's herbarium, or as it is now properly called, the Herbarium of Harvard University, and this kept me at Cambridge and vicinity for several days in the middle of August.

As but few of your readers are familiar with the locality, it may be well to say that all that relates to botany at Harvard, is centered at the Botanic Garden, more than a mile from the college buildings proper. As I entered the garden by a well kept drive, I could contrast its present appearance with that when I first visited it, now over 30 years ago. The house, occupied by Dr. Gray and formerly Nuttall, and others, a rickety greenhouse, and a shabby house for the gardener, were all the buildings at that time. The garden was a dense thicket of forest and undergrowth, with a few beds around the circular pond. The growth of Doct. Gray's herbarium soon required additions to the house; later a special fire-proof building, a fine hall, with a gallery around it, was erected for it; the old greenhouse in time gave way to a new and handsome structure.—Later still, and within a few years, a botanical laboratory and lecture-room have been added, and this group of buildings, standing upon a terrace, and facing the garden, present an appearance wonderfully in contrast with that of 30 or more years ago. It is satisfactory to know that the largest herbarium in the country is safely housed, and it would be a great relief to botanists to know that Columbia College had made similar provisions for the safe keeping of the Torrey Herbarium, in some respects the most valuable of any in the country. In the Herbarium and its adjoining studies, Doct. Gray and Prof. Watson are doing valuable work, while in the laboratory and lecture-room, Prof. Goodale was instructing a large class—nearly 40 I think—mainly of teachers.

The garden itself presents a wonderful contrast to its condition ten years ago. Within a few years it has been placed in charge of Prof. Chas. S. Sargent, who has made a rearrangement of the grounds, and though his plans are far from completed, great improvement is already manifest. Much of the useless growth has been cut away, and the space for borders greatly increased; extensive rock-work has been planned and in part executed; the ponds repaired, and order brought out of chaos. In this work he has the assistance of William Falconer, whose skill as a gardener is attested by the excellent condition of the plants in the houses, as well as in the neatness maintained outside. The care of the Botanic Garden is but a small portion of the labor of Prof. Sargent, who is also Director of

The Arnold Arboretum.

James Arnold, a wealthy merchant of New Bedford, whose garden was long one of the sights of that interesting city, left in his will a handsome sum for the establishment and maintenance of an Arboretum. The trustees of this fund finally conveyed it to Harvard University. To establish an Arboretum, which shall include every woody plant that is hardy in its locality, is no small task, and few have any idea of the immense amount of preparatory work required. A large share of the plants needed in such a collection, can not be bought at nurseries, or elsewhere, but must be raised from seed or otherwise, also a large stock must be accumulated for the purpose of exchanging with public and private gardens and arboretums abroad, which contain plants which money can not buy, and which can only be had by giving an equivalent in other rare plants. It is very fortunate that the very initiative of the Arboretum was placed in the hands of Prof. Sargent, as there are but few who would lay the foundations so deep, and begin with the patient and far-seeing labor that he has bestowed. It would be very easy to make a show with overgrown nursery trees, which their owners would be too glad to sell, and this is the way in which many would begin; but Prof. Sargent, as the first step, has wisely started a nursery from which to draw for the planting of the Arnold Arboretum, and what is of quite as much importance, it is an accumulated fund to use in exchange. At the risk of being somewhat personal, we say it is a grand thing to see a man in the prime of life, with an enthusiasm which will allow him to work for results which can only be seen at the end of ten or twenty years, and the full fruition of whose labors will only be witnessed by others, long after he has been "gathered to his fathers." The natural growth of the tract has been cared for, poor specimens thinned out that better ones may develop, and much preparatory work of this kind has been done. The appreciative visitor will be much interested in the

Propagating and Nursery Department,

where, in a goodly range of houses and pits, seedlings are raised in thousands, and when large enough transferred to nursery rows. The nursery is in exceedingly thrifty condition, and in the variety and rarity of its plants, probably unequaled in the country. In this department Prof. Sargent is especially fortunate in his foreman, Mr. J. Dawson, who is a most enthusiastic and successful cultivator....As one travels through portions of Eastern Massachusetts, he is struck by the great area of

Unoccupied and Useless Land.

There will be stretches, sometimes of miles, that are quite as wild as any part of the "Far West."

The scanty tree growth was long ago cut from them, and being left without further human interference, dense thickets of saplings and suckers have grown up. These will go through a long "struggle for existence," in which, by crowding and starving the weaker, a few of "the fittest" may ultimately survive. Not even do these tracts receive the care of a thinning, to shorten the time in which the wood may be fit for making charcoal, which is the probable destiny of most of it. It is gratifying to know that a beginning, at least, is likely to be made to bring this waste land into profit. Misfortunes are not the only things that never come singly, for good things have a pleasant way of liking good company, and the attempt to excite

An Interest in Tree Planting,

may be directly traced to the good gift of Mr. Arnold, and the placing of the Arboretum in the hands of Prof. Sargent as Director. But I must not make too long a story of it. There is another good—exceedingly good institution in and around Boston—the Mass. Society for Promoting Agriculture. In view of the good this Society has done, and is trying to do, we can forgive its unhandy name. It is fortunate in the possession of two exceedingly good things for any society to have: a handsome endowment and an efficient Board of Trustees—gentlemen who know how to be liberal with the Society's income when they see that good results may follow expenditure. Prof. Sargent is a member of the Board, upon which are other gentlemen of similar tastes, and holding similar views as to the importance of awakening an interest in tree planting, and a portion of the income of the Society has wisely been appropriated to the encouragement of arboriculture, with a view to show the owners of these now unproductive lands how they may be made profitable, and while adding to their own income, increase the prosperity of the State. The Society's first step in the matter was to offer

Liberal Prizes for Tree Planting,

which were noticed in Aug. last, p. 287. The connection between this and the Arnold Arboretum is this: From his position as Director, Prof. Sargent has a wide correspondence with and is in most favorable relations with arboriculturists all over the world, and is thus enabled to aid the Society in a manner in which hardly any other person could. The Society does more than to merely offer prizes for plantations of trees, it proposes to aid those who wish to compete in making a start. There is nothing which ordinarily sensible people so blunder about as trees in general, and forest trees in particular. As it now is, the Massachusetts landowner has only to fix upon the prize or prizes for which he will compete, and he will not only be told whether he can best get his seeds or young trees at home or abroad, but if from abroad, his trees or seeds will be imported for him, or if at home, he will be put in communication with dealers in the stock especially desired. The details of this matter, as well as all that relates to the prizes, are in the hands of Mr. Francis Skinner, of Brookline, Mass., who is Prof. Sargent's efficient aid in many of the duties belonging to his position, and in all matters relating to the prizes acts as the Agent of the Trustees. It will be seen that, while the Arboretum as a collection of trees is in only a formative condition, its influence is making itself felt throughout the State. I have great hopes of positive results from the efforts of this

Public-Spirited Society,

as it seems to possess every element of success. The President of the Society, as well as of the Trustees, is the Hon. Thomas Motley, whose deep interest in all rural matters and executive ability, have in various ways aided in agricultural progress, and as members of the Board we find the names of Saltonstall, Robeson, Bowditch, Lowell, Adams, and others, familiar to all who take note of rural matters in Massachusetts. If any of my readers in the Bay State have failed to acquaint themselves with the terms of these tree planting prizes, they should send to Mr. Skinner, as above, for the circular....Of course I visited

Mr. Sargent's Own Grounds,

and it can be no violation of the proprieties to speak of a place which was visited this spring by 40,000 strangers. The finest collection of Exotic Azaleas in the country, is here, and for several years the plants, when in perfection, have been placed in an enormous tent upon the lawn, and all who cared to visit the exhibition were welcomed. There was given in "Hearth and Home" for June 21st, 1873, an engraving showing some of these plants, remarkable for the perfection of their training, as well as for their enormous size, and they have lost nothing with added years. The grounds of Prof. Sargent, and his father, Ignatius Sargent, Esq., a veteran horticulturist, together comprise about 150 acres, and it would be difficult to find a spot, where variety of surface, rock, lake, and wood, through which vistas open to the distance, combine in more picturesque variety. The gardens, filled with rare plants, the trees, of which there are many fine specimens, the extensive ranges of houses, all bear witness to the skill of Prof. Sargent. Indeed, one would suppose that in his home grounds alone, there was sufficient to employ all his time—but such is his executive ability, that he finds this but recreation from his regular work at the Botanic Garden and Arboretum. An account of some of the striking features of these grounds, and other matters, must be preserved for another month.

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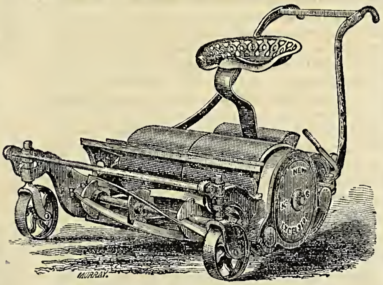
Lawn-Mowers for Horses.

Recently on a visit to a place where there were acres of lawn, the grass was in such fine condition, that we were led to ask what machine was used. The reply was, "the Excelsior." This reminded us that in an account of some of the leading lawn-mowers, given in June last, we did not give an illustration of the Excelsior Horse Lawn-Mower, owing to the fact that, through some mishap, an engraving expressly prepared for the article, failed to reach us in time; this we regret, as when we describe machines, of which there are several styles and makes, we prefer to present the different kinds at once, in order that the reader may compare them, and determine which seems most desirable for his use. The "Excelsior" mowers, whether for hand or horse power, are made by the Chadborn & Caldwell Manufacturing Co., Newburgh, N. Y., and the heaviest part of their business is with the horse-mowers, in which they have made special improvements, and which are largely used in this country, and great numbers of them are exported to Europe, where large lawns being more frequent than with us, the demand for horse-machines is much greater. In order to show the form and style of the "Excelsior" horse-mower, we here give the engraving that should have been presented last June, in company with that of the popular hand-mower.



THE "EXCELSIOR" HORSE LAWN-MOWER.

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THE JAPAN CREEPER.—When this was first offered, we presented an engraving of it, and have since shown that, for many purposes, it is greatly superior to its American brother, the Virginia Creeper. The Japan vine was introduced as *Ampelopsis Veitchii*, as it came into cultivation through the efforts of the Messrs. Veitch, but it had long before been described as *A. tricuspidata*, which is its proper name. But we trust to see it so well known, that it will be recognized as readily by the name Japan Creeper, as our own is by the prefix Virginia. While our native species has its leaves divided into five parts, the leaves in this are merely lobed, and resemble those of some grape vines. The vine will rapidly cover a surface in the closest and completest manner, and with a green that is livelier than that of our own, while its more delicate habit allows it to adapt itself to architectural details in a manner not possible with the other. Several years ago we saw some fine specimens near Boston, and it has since become quite frequent in the streets of the city itself. Some of the new and costly residences upon the "Back Bay" lands are beautifully draped with this vine, which is one of the few plants of recent introduction, that fully meet the anticipations formed when they were first brought into notice.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Buying of Peddlers.

"I never trade with peddlers," I have heard ladies say, seeming to take credit to themselves for superior sagacity. Some even go so far as to exclude all peddlers from the house, never allowing one to come beyond the door step. But is not the traveling trader engaged in legitimate business? He is not a tramp. He is not a beggar. Busy house-keepers, living far from stores, are sometimes very glad to have thread, needles, buttons, tapes, combs, etc., brought to them. Such has been my experience more than once; and even yesterday I was not sorry to see a peddler coming in at the gate, though I now live in the neighborhood of two or three small country stores. It sometimes happens that, for a week or two, I do not feel that I have time to spare to run into a neighbor's house or a store, but send a child on every errand. Here was a man who would show me his goods while I was making my bread into loaves; and not a minute wasted, you see.

Did I want to buy anything to-day? I thought of calico, shoes, ammonia, graham flour—but the peddler's pack did not carry these. I asked for pearl buttons. He had just sold the last of his buttons. Had he any lace footing? No. Any narrow embroidery suitable for the necks of children's dresses. O yes! Embroidery, plenty of that. But it wasn't suitable. Evidently he had nothing which I particularly needed, but I thought it only fair to buy something to pay him for the trouble of opening his bundle, as he would not have done had I answered his first question in the negative. So I took a linen handkerchief and a bunch of shoe laces, and paid him twenty cents for the two, supposing that the whole business was over.

But no. Couldn't he sell me a nice bed-spread? No. I was not wishing to purchase one at present. But he had some very nice ones that he was selling very cheap, because he wanted to get back to Chicago this week, and he would show them to me. I told him he would only be sorry for opening the larger pack, for I was almost sure I should not buy anything. He wanted to show me his table-cloths, towels, ready-made garments, and bed-spreads, and I need not buy unless I chose. Before many minutes he was doing his best to make me buy a bed-spread and a table-cloth, which he offered me for $3.25. The counterpane was worth $5.00, he assured me, and the table-cloth (buff unbleached linen), $1.25. But because he was determined to sell out his stock of goods immediately, he offered the counterpane for $2.50, and the table-cloth for 80 cents, and he would let me have the two together for $3.25. Here was a bargain. I would never have another like it, he was certain. If I had not looked at these things at all, perhaps I would have been spared all this urging to buy. But it happened that I did want a counterpane, and had long wished for one of about the quality of this. I never *needed* it less than at present, while there were other things that I did need, and my money would not purchase all. He would tell me what he would do, He should lose by it, but he would let me have those two articles for $3.00. Then shortly he offered them for $2.80. Then he put with them a pair of boy's suspenders, of which I had inquired the price—all for $2.80. Then $2.75. At last I might have the counterpane and table-cloth for $2.50. He seemed to wonder what I could be thinking of, to refuse such an offer. But I had told him all along that I could not spare the money now, for these things. I did not need them so much as I needed other things. Just now I did not need them at all, but I thought he was selling them cheap, and would get them if I had plenty of money. He grew so earnest about it that I was almost afraid. At last he put aside the counterpane, saying, "I see you are poor, you do not want that spread." I looked to see what emotion the contemplation of my poverty called forth, but he was simply serious, and he continued, "You can have that table-cloth for 70 cents." I went immediately and got the money. In doing so I spied two pairs of children's stockings which I had bought of a peddler in the spring, and found too small for use. I asked if I couldn't trade those for handkerchiefs or something. No, he did not want any more goods. He only wanted to sell what he had. He wouldn't give five cents for those stockings. He had had just such stockings, and sold the last of them for ten cents a pair. What did I pay for them? I told him I gave 25 cents a pair, which I knew was too much. "No," he said. He sold the same kind of stockings for that price in the spring, but to get rid of them lately he had to sell them much cheaper. "But," he suggested, "you have not lost your money, for they are of good quality, and if they are too small for your girls, you can put them on that little boy." I hadn't thought of that. So he strapped his heavy pack upon his back, took his valise in his hand, and trudged on, and I, as I put away my kneading board and tidied my kitchen, indulged in a train of reflections, which led to the writing of this paper. I don't despise a peddler because he is a peddler. He is a hard working man, and he surely might be in worse business. The last one before this who called here, selling erasive soap and silver polish, told me that he went to peddling because he lost his situation in a machine shop on account of hard times, and couldn't find anything else that he could do. One man, who is very popular now as a story writer and preacher, used to peddle soap in this region, I am told. Bronson Alcott, too, was a peddler once. But the pertinacity of some of these traveling traders, like that of agents for lightning rods and insurance companies, is sometimes hard to bear. More than once I have been worried into purchasing something which I did not want, and of which I never afterward could bear the sight.

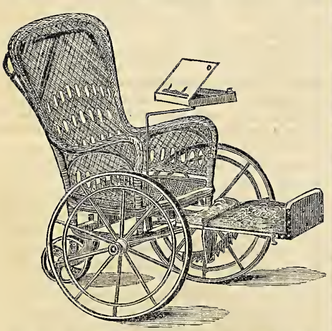


Fig. 1.—SMITH'S WHEEL-CHAIR, PLATTED BACK.

Getting Things Mended.

Have you never been astonished by the charge made by your cobbler for some trifling repairs upon your boots? When the old boot begins to go to pieces, it seems to you that a few stitches here and a few stitches there, would make it all right again, and of course it would cost little. But before you leave them with the cobbler or shoe-maker, inquire what charge he will make, and very likely you will conclude that it will pay better to get a new pair, than to have those mended. Not being a shoemaker yourself, you can not tell how much time and labor it may take to repair what seems to you very small damage to the boot.

Quite recently an acquaintance of mine had a lesson in this line taught her by a clock tinker. Or rather she learned more forcibly a lesson previously taught her, for she did ask the tinker what charge he would make for putting her clock in order, before she yielded to his request and gave him the job. But she could not get him to fix a price. He only assured her pleasantly, "We shan't quarrel about the price,"—and went about the business. Now "hard times" had already come knocking faintly at the door of that house, and other houses round about, so very naturally my friend's husband asked also about the prospective charges, when he came in, and found the silent old clock coming down for repairs. "Not much," said the tinker, "we shan't quarrel about the price."—So the young husband went out and unhitched the tinker's horse and led him into the yard, where he might graze on the fresh green grass, and I believe that the tinker also was served with some refreshment. For my friends knew just how nearly they had reached the bottom of the purse, and just how long it would be before harvest, and they hoped to soften the tinker's heart.

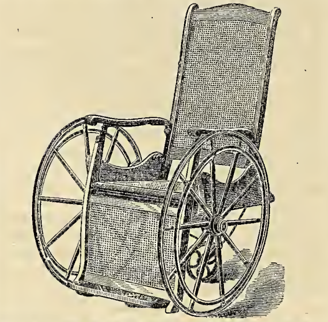


Fig. 2.—NEW HAVEN RECLINING ROLLING CHAIR.

They watched his operations with the clock, and he made so few changes, or did so little to the machinery, that the young wife thought "he surely can't charge more than a dollar, and ought not to ask that"; and the young husband said within himself "that piece of work isn't worth *over* half a dollar, anyhow."—When it was done, the tinker, so sure that they wouldn't quarrel over the price, coolly charged two dollars for the job. The man of the house as coolly replied "I never shall pay that price."—Then the tinker grew angry and refused to accept even half a dollar, or anything less than the price asked, but rode away in great wrath. And the old clock wouldn't go after all.

How many of us have had our trials and disappointments with the tinkering and high charges of sewing machine agents! With what difficulty you conveyed your machine to the room of some agent, and with what difficulty you parted with the five dollars charged for its repairing, when it was said to be all right, and then with what difficulty you submitted to the inevitable, when the machine wouldn't go any better than it did before mending.

Simplicity and Health in Dress.

The gifted women who center at the "hub of the universe" named Boston, did not set their wits to work in vain, when they began to study the question of woman's dress. One of that band, who is also one of the authors of an excellent little volume on "Dress Reform," writes me in a private letter that three articles constitute her present dress, the chemiloon, the gabrielle skirt, and the princesse dress—light, quickly put on, comfortable, and graceful in outline. On account of the present exaggerated ideas of woman's shape, some kind of pannier projection is made in the back of the skirt, to give the required outline to the outer dress. These articles of dress have all been described, more or less, in the household columns of the *American Agriculturist*, and I have had repeated calls from its readers, to tell them where patterns could be obtained. The book mentioned above, gives much information about the manner of making the new garments. This information is found in the appendix of sixty-nine pages, and is properly illustrated. The body of the book is made up of five lectures on "Dress Reform as it Effects the Health of Women,"—all of them by educated and successful lady physicians, except the last, which is by Mrs. Woolson, who edits the volume. This is on the need of a reform in woman's dress, from an æstetic point of view.

The dress reform committee of the New England Woman's Club, studied the subject thoroughly, and became convinced that it was far more important to give women a knowledge of the construction and needs of the bodies, than to assail Fashion, since no dependence can be placed upon Fashion.

They went to work so wisely, that Fashion took no offence, and even now seems inclined to aid the women of sense, by adopting their new undergarments to a degree. The fashion articles mention them, announce patterns for combination waist and drawers, (chemise drawers), and recommend the Union flannel under-suits, (vest and drawers woven in one piece), while they do not go so far as to leave out all use for the waist, but advise wearing that between the under-suit and chemise-drawers. This latter suit must be like the "chemiloon," which by some is cut by a loose basque pattern.

I wish that these lectures on Dress Reform could be given by their authors in every neighborhood throughout the country. This, of course, is impossible. I fear that the volume containing them has not gained the circulation it deserves on account of its useful character; but I can see how the well digested and clearly expressed ideas of the few, intelligent women who gave that course of lectures on Dress Reform, may be given a wide circulation, and be made to do a vast deal of good to women everywhere. The plan is simple, and I for one mean to act upon it without delay, in my secluded little corner of the world. Any woman who wants to help the cause along, can buy the book and write her name in it, and lend it to one and another, taking care that it does not get stranded too long in one place. Or, she can get other ladies to unite with her in purchasing the volume, and have some good reader read the book aloud, one lecture on an afternoon, to a group or assembly of ladies, either in her house or in some more public place of gathering. I wish this plan might be acted upon, for I am sure that it would help the human family on toward health, wealth, happiness, and freedom. I think, too, that the publishers should advertise the book in the *American Agriculturist.*

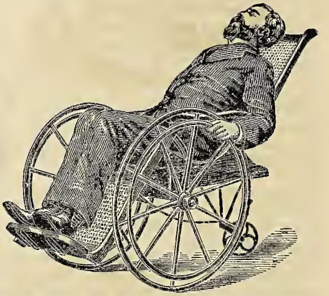


Fig. 3.—NEW HAVEN CHAIR, RECLINING POSITION.

To Wash Black and White Goods when the Color is not Fast.

Wasn't I glad when at last the little boy's suit of black and white cotton goods was completed? It was cheap, but I did my best to make it as nearly as possible as a tailor would have done, and I thought it would do for Sundays for several weeks at least. What a penitent face it was that looked in at the door (the rest of the body out of sight) one Sunday afternoon, while the boy's voice said "Can't you wash my trousers to-morrow and make them look brown all over?" Then I knew what must have happened, for I had already learned that the black would run into the white at the least touch of water, making an ugly brown of it all. Yes, he had tumbled partly into the lake, and such looking nether garments as he wore!

But now they look almost "as good as new," and this is how I did it, guided by the advice of a kind neighbor. I put a pailful of clean warm water in my tub, and mixed in it about two quarts of bran, (I had to sift it out of my graham flour, but the bran is so coarse this time that I was glad to get it out). In this I put the garment and washed it by rubbing wet bran into it with my hands while in the water, rubbing especially the big brown spots which covered almost half of the cloth. I wrung it out of this, and put it into a pail of water in which a large tablespoonful of salt was dissolved, rinsing it well, and then rinsing again in clear water. You would not readily suspect that the trousers had ever been washed, or wet at all. Miss Beecher, I see, recommends washing all calico that fades in bran water, rinsing also in bran water, but of course she would rinse again in clear water to remove the bran.

Comfortable Chairs for the Sick and Well.

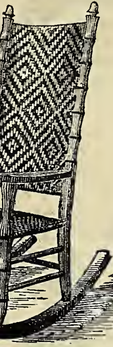


Fig. 4.—SINCLAIR'S "COMMON SENSE" CHAIR.

In no one thing in our household arrangements is greater improvement manifest, than in chairs. Those who can compare the furniture of fifty years ago with that of the present day, will see a wonderful change for the better. From the old, heavy-timbered, straight-backed chair of our grandmothers, we have gone through a series equally uncomfortable, and much more frail, until at last fashion is in accord with common sense, and the chairs in use at the present day are vastly superior to those of 20, or even 10 years ago. Half a century ago, the only provision made for invalids in the way of chairs, was what was, by courtesy, called an "easy chair." What a ponderous machine it was, as it occupied a corner in the "front room," (only opened for funerals or other special occasions), or in the "spare chamber,"—where everything too uncomfortable for daily use, was gathered for "company." That "easy chair," with a seat wide enough for three; its erect back, and equally erect arms—let us hope that it is not the chair that Geo. William, of Harper's Monthly, writes from. What a horrible thing it must have been, not to be ill, but to try to get well, when one of these old-fashioned "easy" chairs was the only intermediate stage between the bed and the ordinary straight-backed and uncomfortable furniture of the period. There was very little fun in being sick in those days. Matters have greatly changed, and inventors, having in their mind the needs of those who are temporarily invalids, or permanently disabled, have provided for these, and at the same time have not forgotten the comfort of the well, but have furnished a great variety of chairs that are well nigh perfect. Every one who went to the Centennial Exhibition will recollect, whether they tried them or not, the rolling chairs, in which so many elderly and tired persons found comfort, and which allowed them to see without excessive fatigue. These chairs were made at the establishment now carried on by Herbert A. Smith, at 32 Platt St., N. Y. This establishment, under father and sons, has been advertised in our columns for many years, and has increased from small beginnings, to be the largest of its kind in the country. An inspection of Mr. S.'s catalogue will show the great variety of propelling and reclining chairs he makes, and he is constantly introducing improvements. We give in figure 1 his recently patented Wheel Chair, with back of platted rattan, in which the back and foot-board have a separate adjustment; it may be used as a self-propelling chair, or may be pushed. The back being of very fine platted rattan, conforms itself to the shape, and is remarkably comfortable. The greatest care is taken to secure durability in all the parts liable to wear, by the use of the best materials.

Among the furniture exhibits at the Centennial, we saw a chair that could be put to any use that one could ever want of a chair, and withal exceedingly simple. This we learned was made by the Adjustable Chair Company, of Pittsburgh, Pa., and now said to be somewhere in New York City, but we have not their present address. At any rate, we purchased one of the chairs, and have had it in daily use for nearly a year, and it has been a great comfort. A great variety of chairs are made by the New Haven (Conn.) Folding Chair Co. They have several styles of rolling chairs, in which the invalid is pushed about by another person, and those which the occupant can move from place to place himself. Figs. 2 and 3 show their Reclining Rolling Chair, which, by a turn of a screw, allows the occupant to adopt any position he may prefer, and by means of a wooden rim attached to the wheel, to move himself from place to place. These chairs are especially manageable, and one can soon learn to propel them with great ease, and to move them to any point with the utmost accuracy. They may be opened out flat to serve as a bed or lounge. The same firm makes an "Invalid's Rocking Chair," which, to judge from the catalogue, is very similar to the Pittsburgh chair, already mentioned, and also rolling chairs of different styles, including some especially designed for children. Inventive genus as manifested in chairs, has not confined itself solely to those for the use of invalids; the comfort of the well has not been overlooked. A chair is made to sit in, and the sitter should be comfortable—a condition not possible with much of the modern furniture. The chair in common use by our grandparents, had a wooden frame, which was filled in with hickory or other splits, or flags cut from the marshes. Aside from the fact that the fashion of these was straight-backed, these were fairly comfortable chairs, as they "gave" with the weight of the sitter; then they were strong, and one did not feel that the frame-work might give way. Some years ago, we figured some "Cooper Chairs," made for piazzas—chairs that we have used with much satisfaction. We now give (fig. 4) an illustration of the wares, made by F. A. Sinclair, Mottville, Onondaga Co., N. Y. Mr. S. calls his chairs the "Common Sense" chairs, and we are not disposed to dispute the title. He claims an experience of thirty years as a practical chair-maker, and when he tells us that he finds certain woods, put together in his best manner, make the best frames, and that "Ash splints" make the best seats, we are disposed to believe him. One of our associates has a chair of this style, and speaks of it in the highest terms. The catalogue issued by Mr. S. of his "Common Sense" Chairs, shows a great variety, with and without rockers; that given in figure 4, is known as the "Centennial Rocker"; others are made with a reading and writing desk. These chairs are of such neat workmanship that they are not out of place even in the parlor.

BOYS & GIRLS' COLUMNS.

Aunt Sue's Chats.

R. T. M. sends an old puzzle which may interest some of our readers, so we give it here. Divide three-quarters of a square (fig. 1) into four equal parts and shape. This is not so difficult to do as to divide figure 2 into equal parts and shape—which may be done.

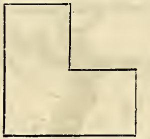
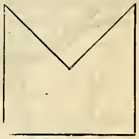



Fig. 1.—THREE QUARTERS OF SQUARE.—Fig. 2.

Jesse M.—The "agent"—being merely an agent—was not liable for any loss to the town. He had to pay to the town at the end of the year $50.23, and give up the stock of liquor (worth $31.37). The town lost—by the year's business—(including the agent's salary) $8.11—and, considering the nature of the business, I'm glad of it. Answers to the problem are still coming in, but I think the subject has been sufficiently discussed.

J. A. W., Jr.'s "Papa."—Thanks for your pleasant letter, I am glad you had to "dodge" the furniture, and glad "Jimmie" liked his prize.

Mary E. H.—I really do not know anything at all about "making feather flowers," but I will make inquiries, and if I learn anything worth mentioning, will publish the same at some future time. Should any of our readers be able and willing to furnish us with instructions, we should be grateful.

Susan.—To be sure I will comply with the request of my name-sake, and all the more readily because others have asked for "a pretty border for Java canvas." Here you have in figure 3 a design in what is called "scroll-work." It is worked in cross-stitch, and when two shades of worsted, of any color you may prefer, are used, the effect is very pleasing.

John W. W.—Your enigma is a scarcely fair one, because such words as you define by "lustrous," "a kind of muslin," "stupidity," etc., are not used in common conversation once in twenty years. (Mine, in the prize enigma, were all common words, except "macaroon," and about that I gave some hints.) Nevertheless, I will some day publish it, as our puzzlers are not easily "stumped."

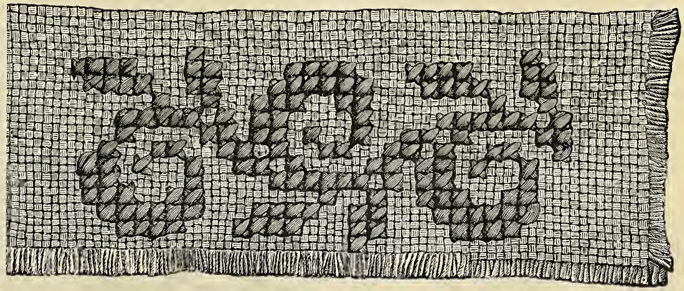
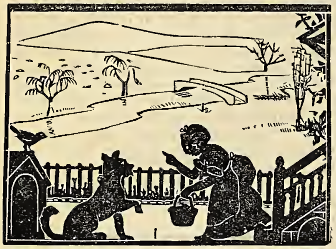


Fig. 3.—SCROLL PATTERN FOR JAVA CANVASS.

The Adventures of a Dog, a Basket, and Two Very Naughty Boys.

Nonsense pictures, like other pictures, should tell their own story, and not need much nonsense talk to explain them. Still, as some may not read the pictures without help, we give also an outline of the story. The principal character is the dog, and his name is Snap. There is Mr. Skinner, an architect who builds stone walls, and as he can not bring his work home, he goes to his work. There is a Mrs. Skinner, who, as it is a long distance for Mr. S. to come to his dinner, sends his dinner to Mr. S. by Snap, who, being a very faithful dog, takes the dinner to a certain tree; he does not eat any, but watches it until his master comes, when he knows he will have a share. Besides these, there are the boys, Tom and Jack, and what kind of boys they were, the faithful history shown in these pictures will tell. In the first chapter, or picture, Mrs. Skinner starts off Snap with his master's dinner basket. What was in the basket we shall probably never know, but whatever it was, Mrs. S., as usual, told Snap to be very careful of it. Tom and Jack were boys who regularly had terrible aches and pains, just before school time, which stopped in a remarkable manner soon after it was too late to go to school. On this particular morning they went off to amuse themselves, and to see if there was any mischief that needed their attention; they took a rope along to help climb trees in case any nuts or apples required looking after. It so happened that these boys (2) went to the very tree under which Mr. Skinner usually took his dinner, and when they saw Snap set down the basket, and go to call his master, they discovered that they were hungry, and determined to examine the contents, and No. 3 shows what they did. Snap soon came back, ahead of his master. So faithful a dog would never let his basket go off in that way without a struggle, and No. 4 shows what he did, and it is continued in No. 5. But the boys did not wish to give it up either, and here (No. 6) the rope came in play. Then the boys, thinking they had quite conquered their enemy, coward like, made fun of him (No. 7) when he could not help himself. But now another party appears, (No. 8). Mr. S. comes for his dinner—and there is no dinner. In the meantime Tom, thinking he had done the most to capture the basket, claimed that he should divide the contents, but Jack would not agree to this, and they quarreled, and the quarrel led to (No. 9) a fight. They were too busy with one another to mind their footing; the bank, which had been weakened by the stream, gave way, and what happened is shown in No. 10. Their history is continued in No. 11. But what became of them did not concern Snap or his master, the basket was safe, and we hope that Mr. S. enjoyed his dinner, and that he gave a good share to the faithful dog, without whose care he would have had no dinner at all. This interesting picture history fails to tell what became of Tom and Jack, the two boys who caused all the trouble. They, no doubt, had their reward, and were put to bed without any supper.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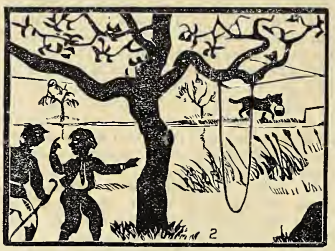
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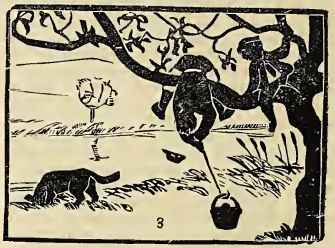
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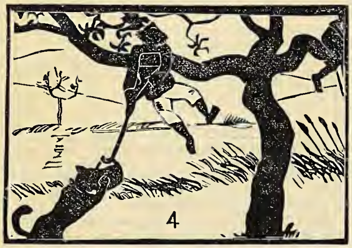
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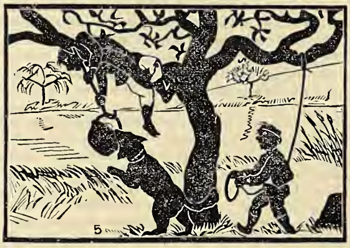
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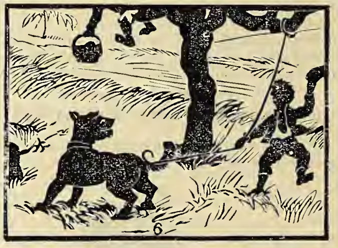
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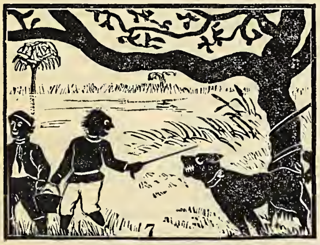
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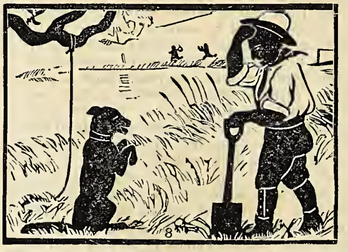
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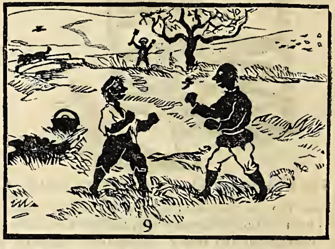
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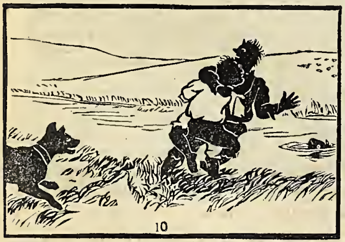
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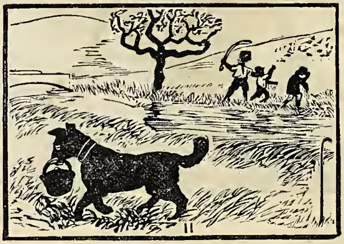
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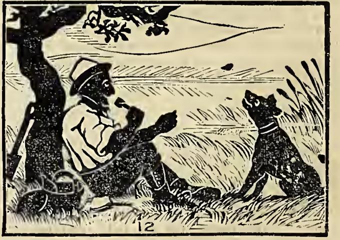
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The Doctor's Correspondence.

My correspondence with boys and girls has impressed one fact very strongly—which is: there is a very little known about very common things. I do not say this because of the questions you ask, for they are all right and proper. But sometimes you ask questions which I *ought to* be able to answer at once, but can not. I then wonder at my own ignorance, and at once look the matter up in books which should tell all about it. Sometimes I find the information I look for, but more often I discover that people who we suppose should know all about a subject, really tell us nothing about very common things. A few months ago I told you how little was known about the common House Fly, and recently some questions about

THE BUMBLE OR HUMBLE-BEES,

showed the same want of knowledge. Every boy who lives in the country, or indeed who lives anywhere except in the most compactly built city streets, knows the common Bumble-Bee, and many know that he has a "business end," especially if in hay-making or berry gathering they have interfered with the domestic arrangements of the *big* "busy bee." "Arrah! how hot the little fut of him is!" said the newly arrived Irishman, who was induced to catch it by being told that it was the American Humming-bird. Probably few boys escape an acquaintance of this kind. The question came some time ago, "Do Humble or Bumble-Bees store honey?" This question suggested another: which is the proper name,

HUMBLE OR BUMBLE-BEE?

Upon looking up the origin of the names, I think that one is quite as correct as the other. Humble-bee is supposed to be from "Hummer-bee," a name given on account of the noise it makes, and our Bumble-bee is also from the noise an insect makes as it "bumbles" around amongst the flowers. For a similar reason the Scotch call it Bumbee, or Boom-bee, which is not far from Bumble-bee. For my own part, I always prefer the names that are in common use in this country. Some think it very vulgar to say "huckleberry," but use whortleberry, because they think it more correct. While in fact one is just as "correct" as the other. So when Bumble-bee is just as correct as Humble-bee, I prefer to Bumble....I have spoken of *the* Bumble-bee, as if there were only one, while the books tell us that there are in this country some 40 species, but they do not tell us which are our most common ones, and in fact tell very little else; the English works say there are also about 40 species in Britain, but as to whether any are found in both countries, they are silent. Indeed, the "*American* Cyclopædia," in describing these bees, tells about and figures only the European species. I mention all this to show how little is known about our commonest insects; if any of you should grow up to be naturalists—as no doubt some of you will—I hope you may study and tell about the very commonest insect and other animals, and not suppose that things are important in proportion to their rarity. As it is, I shall have to speak of the Bumble-bees as if there were but one, but no doubt we have, as in Europe, several kinds that are quite common, some of which make their nests in the ground, others in moss, among stones, and in other places.

"DO BUMBLE-BEES STORE UP HONEY?"

one would think could be answered very readily, but the fact is, that while they do gather and store honey, it is only for immediate use; they do not put up a store to feed upon in winter, as do the honey-bees. The honey-bees, you know, build cells of wax, a material produced by their own bodies, and place these very closely, side by side, forming what is called a comb. These cells, two ranges of which are put end to end in the comb, are mostly six-sided, a shape which allows them to fit closely together and waste no room. These cells answer a double purpose; they are the places in which the young bees are raised, to increase the number, and they are also storehouses for food, especially of honey, of which they lay up enough to last them all winter.

BEES, LIKE MOST OTHER INSECTS,

go through the changes I have often mentioned, 1st, the egg, 2nd, the larva, 3rd, the chrysalis or pupa, and 4th, the perfect insect, the winged (and usually "stinged") bee. All bees go through these changes, the social bees, like the honey and bumble-bees, which live in colonies or swarms, and the solitary bees, like the Mason, the Carpenter, and the Leaf-cutter-bee, of which one mother-bee undertakes, without help, to provide for the future wants of her family. Unlike the honey-bee, the Bumbles

LAY UP NO STORE FOR WINTER;

all but the females, or queens, die off at the approach of cold weather, and these find in moss, or in holes in trees, a safe hiding place for the winter, where they stay all through the cold months in a torpid state, and do not require any food. When the warm days of spring come, these bees wake from their long sleep, and finding that the time has come for commencing business, they go bumbling around for a place in which they may open shop. They hunt among all the holes and crevices, and very often take up with an old nest of the field mouse. As the colonies of Bumbles are said to never contain over 300 bees, and 60 is about the average number, not a very large place is required. They sometimes show much ingenuity in hiding their nest; the entrance being among moss or grass, at some distance from the nest itself. The Bumbles are much less orderly in their housekeeping than the Honeys, and they go at it in a different way. The Honeys first build a neat waxen cell, a cradle for the young bee, in which it is fed, and finally put to sleep as a pupa. The Bumbles have both

CRADLE AND FOOD IN ONE.

To begin operations, Mrs. Bumble collects a lot of pollen—the dust which flowers so abundantly produce—and makes this into an egg-shaped ball. She then lays several eggs in this mass, and these soon hatch out the larval Bumbles, or maggots, which are the second stage in the life of these insects. One of these masses, with the young maggots, is shown in figure 1. As these grow and feed away upon the pollen, they make the mass into a cell, and when ready to spin their cocoons and undergo their changes, the parent bee covers this cell with a coating of coarse wax, and after a while the insects come out as perfect bees. But the queen has in the meantime started other cells of this kind, and when the first lot come out as perfect insects, they are ready to help her, and among them all the colony grows rapidly. The number of these cells soon increases, and some are built especially to hold honey, which is kept on hand as food. Figure 2 shows a section of a nest of the common European Bumble, which is lined with leaves and wax, and in which the cells are placed in an irregular manner, sometimes being held in their places by rough pillars of wax. It is not rare that boys, and sometimes men too, in the haying-field, break up a Bumble's nest for the sake of the few spoonfuls of honey that they get. I do not know how it is with our bees, but in England, though the honey is very finely flavored, it very often makes those who eat it, even in small quantities, very sick. The Bumbles have not only these

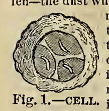


Fig. 1.—CELL.

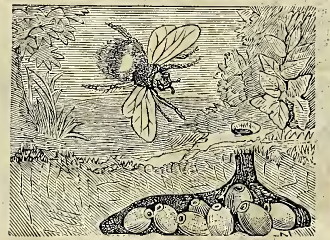


Fig. 2.—BUMBLE-BEES' NEST.

TWO-LEGGED ENEMIES

to disturb them, but the field-mice have a very "sweet tooth," and rob them of their stores. Besides these, they have several insect enemies, one of which is about the size of, and looks so much like a bee as to be mistaken for one; this lays its eggs in the bees' nests, and has its maggots fed by them, the bees apparently not knowing the difference; but when it comes out a perfect insect, instead of staying to help the bees keep house, it goes off on its own affairs, without paying for board, lodging, and nursing....Such are the principal points in the hives of the Bumble-bees, but as we have so many different kinds, they may vary somewhat in their ways. If any of you wish to take-up the study of our Bumbles, you will no doubt find much about them that is not down in the books. When the flowers fade and the frosts come, the lives of the male bees come to an end, and the few females hunt up a hiding place and go into winter quarters.....Several weeks ago, a gentleman in Virginia sent me specimens of the largest beetle in the country,

THE GREAT RHINOCEROS BEETLE.

That you may see a portrait of the creature I give you one in fig. 3, of life size. The horn-like projections in front are found only on the male, though the female is quite as large. They vary greatly in color; those sent me were two males and one female; the males were of a grayish-green color with blackish spots and blotches, and the markings quite unlike, while the female was blackish-brown without any of the light color. The entomologists call these insects *Dynastes*, which is the ancient Greek and Latin name for a prince or ruler—probably thinking that they are large enough to rule the rest. But ours are pygmies compared to a Rhinoceros Beetle found in South America, which is full six inches in length! Ours belongs to the Southern States, but has been found as far north as Philadelphia. Their grub state is passed in decayed stumps, and as they feed upon rotten wood they do little or no harm. But what do you suppose was the reason my Virginia friend sent the specimens, and wished to know something about them? They were very abundant about his place, being especially lively in the evening; they were so numerous that his family had to stay in the house at night—not that they were afraid that the insect would hurt them, for they can neither bite nor sting—but on account of

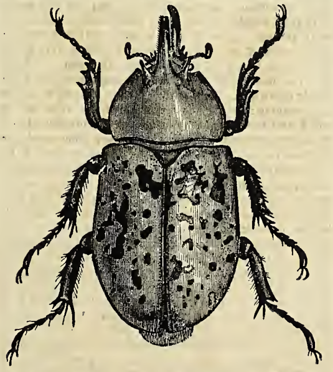


Fig. 3.—RHINOCEROS BEETLE, LIFE SIZE.

THE HORRIBLE ODOR THEY GIVE OFF!

The insects came in a tin box and in very lively order. In placing them in a glass jar their odor so filled the room that I was glad to cover them with the cap of the jar, and open all the windows. It is of no use to try to describe the stench, for it is worse than several dead dogs, and other unpleasant things. Indeed I do not think I ever "smelled a smell" quite so unpleasant, and I really pitied the Virginia family who were obliged to endure it. I intended to keep the beetles alive for some days to watch their movements, but the cover of the jar was not air tight, and I could not tolerate them, so I poured some alcohol over them and

MADE SPECIMENS OF THEM.

In looking up the history of this insect, I was quite surprised to find that this peculiarity—and the most important so far as man is concerned—its ability to make itself exceedingly disagreeable, was not mentioned in any of the books.....But this is enough insect talk for this time, though there are some others that I would like to tell you about.....Here is a question from one of our boys in Pictou, Nova Scotia, who asks; "Can you tell me the best way

TO MEND BROKEN GLASS WARE?"

If he had told what kind of glass, and what the ware was to be used for, I could have answered him better. A strong and colorless cement is made of isinglass (sturgeons' swimming bladders) and gum mastic, but a boy would hardly be likely to make it properly, and considering the difficulty of getting the materials, it will be as cheap to buy it ready made. It is sold at the drug stores as "Diamond Cement" and by other names. One of the best cements for common use is shellac. This is melted and made into sticks as big as a lead-pencil, and used by melting it in the flame of a spirit lamp or candle, the pieces to be joined being made hot. Better still is it to dissolve shellac in strong alcohol, making it as thick as molasses—it will dissolve in a few days if set in a warm place. This is painted or smeared upon the broken edges of the glass, and the pieces are tied or held together until the cement is quite dry.

◆

Aunt Sue's Puzzle-Box.

SQUARE WORD.

Make a square of four names; four letters in each: the upper and lower, two girls' names: the second and third, two scriptural men's names.

PUZZLE.

Make a sentence, combining not more than nine letters, out of which you can get (one at a time) all the personal pronouns.

ANAGRAMMATICAL BLANKS.

Fill the following blanks with the italicised words transposed.

1. *She ranted* about the love and affection of her ——.
2. You would not call politicians *sober spouters* if they were very ——.
3. There is *soda, I fear* in the —— biscuits.
4. When I engage in ——, *I bag rulers* and everything else worth two cents.
5. I should think that that animal could "*scoop ribs*" (man and all) with his ——.

TRANSPOSED CITIES.

The meanings given of the transpositions.

(For example.—A peddler (vender):—City—Denver.)

1. Braces. 2. Parts of a door. 3. A vessel. 4. A god. 5. Additional. 6. A stick. 7. Passion.

METAGRAM.

Find the name (or title) of a certain ruler, composed of four letters, out of which you may get (1) a command, (2) an entreaty, (3, 4) two animals, and (5) an idol.

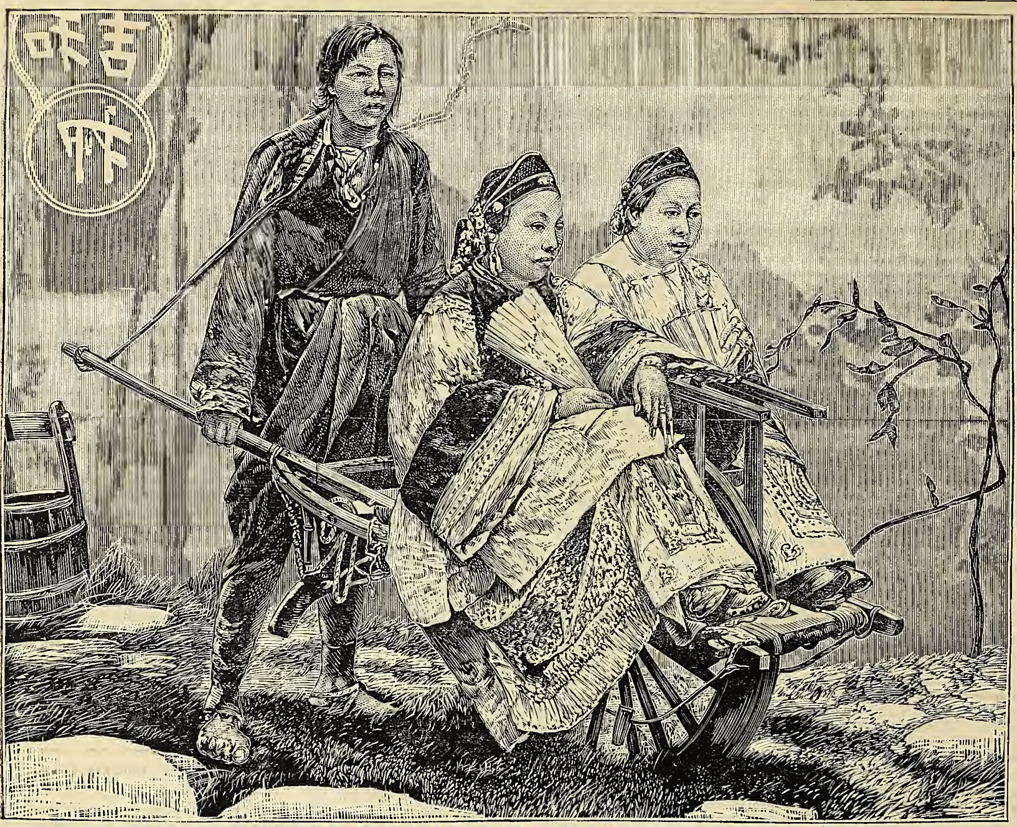
ANAGRAMS.

1. Save Eb's corn.
2. Concave inn.
3. Ural cavern.
4. Train my mole.
5. Sam's bad cue.
6. Luna ghost.
7. Sour cheater.
8. Mistic ice-scales.

◆

ANSWERS TO PUZZLES IN THE AUGUST NUMBER.

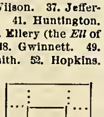
PUZZLE PICTURE.—(Begin at the top left-hand corner, go down, then to the right, then up, etc.) 1. Clark (only the *lark* has flown out of the picture, leaving the "100" [C] on the roof.) 2. Paine. 3. Williams (sick man in the window, etc.) 4. Hall. 5. Floyd. 6. Adams (A dam S). 7. Hewes. 8. Lewis. 9. Rutledge. 10. Carroll. 11. Ross (Row S S). 12. Rodney. 13. Rush (R U s H). 14. Penn. 15. Morris (1000 o'er Is). 16. Read. 17. Stockton. 18. Paca. 19. Hancock. 20. Taylor (the rooster's *tail* and OR). 21. Braxton. 22. Middleton. 23. Bartlett (Bar-tea LET). 24. Franklin. 25. Lynch. 26. Witherspoon. 27. Wythe. 28. Stone. 29. Wal-



CHINESE LADIES TAKING A CARRIAGE RIDE.—*Drawn and Engraved for the American Agriculturist.*

ton. 30. Thornton. 31. Morton. 32. Livingston. 33. Hayward. 34. Hopkinson. 35. Nelson. 36. Wilson. 37. Jefferson. 38. Wolcott. 39. Chase. 40. Hart. 41. Huntington. 42. Sherman. 43. Whipple. 44. Lee. 45. Ellery (the *Ell* of the house). 46. Gerry. 47. Harrison. 48. Gwinnett. 49. McKean (Mc key N). 50. Clymer. 51. Smith. 52. Hopkins. 53. Hooper.

THE 24-STICK PUZZLE may be solved by leaving the four center sticks and the twelve outside sticks (taking away the eight intermediate), which will leave two squares, though not of the same size.



DOUBLE ACROSTIC.—W— igh —T—Whittier, Tennyson.
H— agu —E
I — onia —N
T— iffi —N
T— urke —Y
I —llinoi —S
E— br —O
R— oue —N

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

☞ Correspondents will save time, if they will address their letters to me, *until the first of November* (not afterwards), to "Rowayton, Fairfield Co., Conn."

How Things are Done in Other Countries—How People Travel.

If asked to take a drive, I have no doubt that most of you would be very willing to go, as there are few things that boys or girls like better than to be seated in a carriage of some kind, behind a lively stepping horse, and go along smooth roads in a pleasant locality, where fields, hills, rivers, and farm-houses make up a charming panorama. But when driving along in this pleasant manner, did you ever think of how differently people in other parts of the world go from place to place? If a farmer in one part of our country, New Mexico, were to take you on a jaunt—I mean one of the original New Mexicans, not the "Americanos" who have gone there since—the chances are that he would put you into a cart with solid wooden-wheels—not a nail used in the whole of it, and with a pair of oxen hitched by their horns, he would start off quite lively. When the oxen were fairly on the trot, if you did not go many miles, you would get about as much ride to the mile as anywhere—with the music thrown in. This vehicle makes its own music as it goes along; the wheels are of wood, the axles are of wood, and the music they make as the clumsey wheels go wobbling around, is quite unlike any other music, or —if you prefer it—any other noise, I have ever heard. In a wonderful contrast with this, would be your journey with a Lapp; the fleet reindeer instead of oxen, and a sledge, that has no wheels at all. If you took your ride in India, the carriage would not be behind the animal, but on his back, as you would no doubt have an elephant, and in that country it is well to be up out of the reach of tigers. I have no doubt that by thinking a little, you can imagine other ways of traveling: the Esquimaux would take you with his dogs, elsewhere it would be a yak, a camel, a buffalo, (not our's though), a llama, and so on until you get around to China. When you in imagination reach Canton, Pekin, or other large city, you will expect to take your ride about it with a carriage and horses. But as the streets are only 6 or 8 feet wide, and crowded with people, carriages like ours would not get along very well if they had them. Their carriages are purely Chinese—and the power that moves them purely Chinese—in fact a Chinaman. The picture shows a couple of ladies going out to make a call, or to do their shopping, and you get a very good idea of the turnout, and also of the dress of the passengers. You may think that the coach bears a strong resemblance to a vehicle you have known at home as a wheelbarrow. If it does, it is the only wheeled vehicle that they have, and this comes within one, of having no wheels at all. When there are two passengers, they seat themselves one on each side of the wheel, as in the picture, but if there is but one, that one, at least if a man, sits astride of the wheel. I never had a chance to try a Chinese coach, but a friend who was a long time in Canton, says it is not so bad when the streets are smooth, but when the roadway is rough, he much preferred to go on foot. To judge by the road in the picture, the ladies will get their money's worth, if they go very far. Those who do not like this kind of vehicle take the only other that is to be had, which has no wheels at all, but is a Sedan chair, a box large enough to sit in, with long handles or shafts at each end. Here the motive power is not a Chinaman, but two Chinamen; they pick up the Sedan and its passenger and resting the shafts on their shoulders go off at a jog trot, which is very pleasant for the one who is inside, whatever it may be for the two outsiders. You may think it very strange that men do the work that in other countries is done by horses or other beasts, and you would hardly enjoy a ride if you were carried about by two of your own countrymen. But we shall not have to go very far back to find that our own ancestors used a conveyance very much like that of the Chinese, for not longer than a hundred years ago, Sedans were in use in England and to some extent in this country. I call the Chinese affair a Sedan, because I do not know any other name for it. The European Sedan chair is said to have been invented in the French town of Sedan, a place now noted as that where Napoleon III. surrendered to the Prussians in 1870; but as in China all their ways are very ancient, I have no doubt they used Sedans there long before they were known in Europe. In England there were not only public Sedans to be hired on the streets, but every person of means had his private ones for the use of the family, and they were much used, especially by ladies, and I have old people speak of seeing them in our streets. So in our ways of going about cities we are only about a century ahead of the Chinese. I may add that a Palanquin is only a larger form of Sedan, in which the passenger lies down upon a stuffed cushion and it is carried by four men, two at each end. These are still in use in Hindostan, and also in parts of Brazil, and travelers speak of them as being very comfortable.

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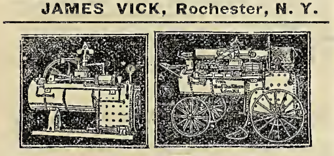

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☞ *See Am. Agriculturist for June.* 1877, *page* 230.

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The Robbins Washer is an entirely NEW MACHINE. It is constructed upon a NEW PRINCIPLE—that of forcing water by downward pressure through the fabric. The dirt or discoloration is removed by water force—there is no rubbing or friction about it. This principle is the only one that has ever been successfully applied to the cleaning of fabrics by machinery. All others have failed in one or more essential points. The Robbins Washer will cleanse perfectly, without rubbing, all kinds of wearing apparel, table or bed linen. It will not injure the most delicate fabric. It is the greatest bleacher extant, and for this purpose alone is worth ten times the price of the machine. It is simple, self-operating, never gets out of order, and will last a lifetime. It saves time; it saves labor; it saves material.

By purchasing a ROBBINS WASHER you can count the hard drudgery of the washboard among the things of the past.

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THE RETAIL PRICE IS ONLY **$3.50.**

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In bringing the Robbins Washer before the public it becomes necessary to take into brief consideration the

ART OF CLEANSING FABRICS,

which, although so common, is yet imperfectly understood. Having had a lifelong experience in the laundry business—in connection with first-class hotels, public laundries, asylums, hospitals, &c.—we know whereof we speak. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash boilers, &c., have all done very well, so far as it was possible for such principles and devices to do. But they have all failed in one or more of the three essential points, viz.: The saving of labor, the wear and tear of clothes, or in perfectly extracting the dirt or discoloration—all of which are accomplished by the ROBBINS LITTLE WASHER.

WHAT IS IT THAT REMOVES THE DIRT?

You may ask all washerwomen and housekeepers, and your answer from nine out of ten will be: "Plenty of elbow grease;" or, in other words, plenty of hard, laborious rubbing on the washboard. And such is the case, for you first have to rub soap upon the cloth, then you have to rub it in to make the dirt soluble. But does that remove it? No; to do that you must first dip it in the water, and then rub it in again to force water through the fabric. That is what removes dirt after being softened by the chemical action of the soap upon it.

The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been developed in the LITTLE WASHER that embodies all the above-named points.

THE PRINCIPLE OF THE LITTLE WASHER

embodies all the essential points. First, we have the desired heat, which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which causes a rapid downward current of water force through and through them, thereby removing the dirt. Third, we use a large body of water, which holds the dirt in solution. Thus we cleanse thoroughly, rinsing the clothes as usual being all that is required to complete the operation.

The Washer is composed of solid galvanized iron, which will not rust or corrode. There are two sizes—the No. 1, or family size, for ordinary household use; and No. 2, or hotel size, suitable for country hotels, boarding-houses, laundries, &c.

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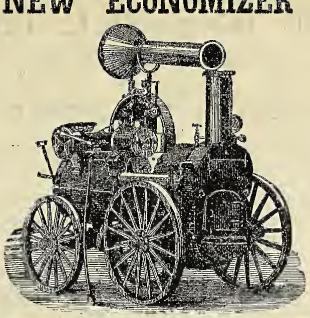

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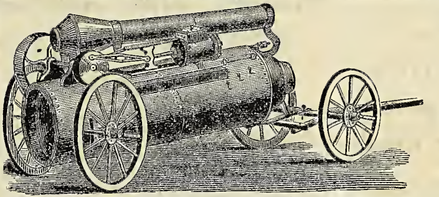

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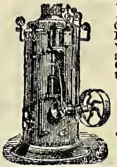

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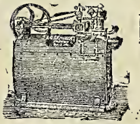

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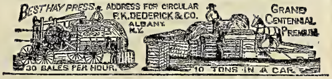
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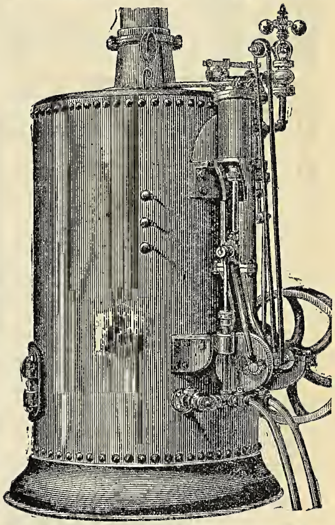

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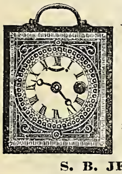

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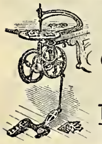

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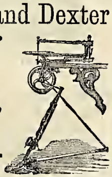

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Will mend Tin, Brass, or Copper Ware, or Lead Pipe, without the use of soldering iron or acid. Can be used by any woman or child. Sample Sheet sent by mail upon receipt of twenty-five cents. Canvassers make five to ten dollars per day. One Agent writes, "Sold to fifty-seven families out of sixty-three canvassed."

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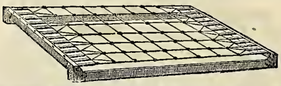

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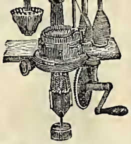

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No. 1	Machine, 60 Needle,	$10.00,	formerly	$20.00.
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(Six extra needles sent with each machine.)

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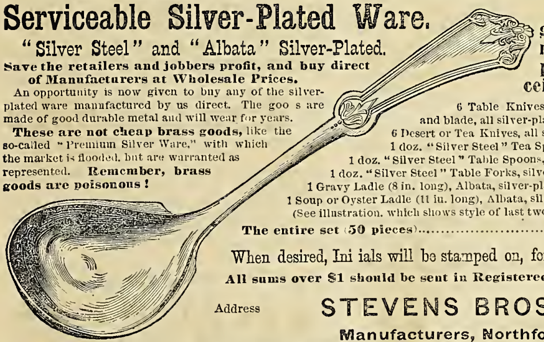

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(See illustration, which shows style of last two mentioned articles.)

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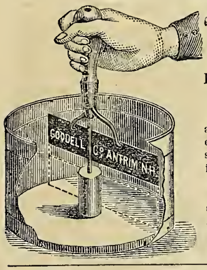
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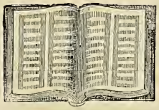

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Imported Scrap Pictures,

for Ornamenting Scrap Books, Pottery, Japanese Jars, &c. Sent by mail from 3c. a sheet and *upwards.* Satisfaction guaranteed as to price and quality of goods.

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THE GREAT AMERICAN TEA COMPANY,
(P. O. Box 5643.) 31 and 33 Vesey St., New York.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 368.

Salt to Stiffen Wheat Straw.—"E. McE.," St. Catherines, Canada. Salt has the effect of stiffening the straw of wheat and preventing lodging when the crop is heavy. But it should not be used in the fall. The proper time to sow it is in the spring before the wheat is shooting into head. As salt is very soluble, and is rapidly washed down through the soil, it is only effective when the wheat is in active growth and is drawing liberally on the soil for its nutriment.

Loss of Sheep.—"A Subscriber," Rome, Ga. The dew on the grass is in no way hurtful to sheep; in fact there are flocks that have little water but that which they get in this way. But sheep that are not used to exposure at nights, sometimes suffer from the damp and contract inflammation of the lungs, or pleura, which is shown by running at the nose and by the presence, after death, of water in the chest and abdomen. Your sheep doubtless died of this disease. If every sheep owner had and read the Shepherd's Manual, which costs but $1.50, and followed the hints and directions there given for the management of sheep, many losses would be prevented.

Plan of Sheep Barn.—"A. A. S.," Olathe, Kan. You will find several plans of sheep barns adapted for a variety of circumstances in Stewart's Shepherd's Manual, which will be sent post paid for $1.50.

A Shepherd's Dog for a Guard.—"Enquirer," Clark Co., Va. The shepherd's dog will make a vigilant and sagacious watch dog. It is very readily trained, and is more easily subjected to discipline than almost any other breeds. A well bred young dog could be procured for about $25. Mr. Wm. Crozier, Northport, Long Island, N. Y., recently gave notice through the *American Agriculturist* that he could supply these dogs. The Newfoundland is very apt to become a sheep killer.

Randolph's Ditching Plow.—"S. T. C.," Charles Co., Md. The ditching plow invented by Senator Randolph is an effective machine, it can be procured through Randolph Brothers, 111 Broadway, N. Y.

Fertilizers for Wheat.—"J. F. H.," Harrison Co., Ind. Artificial fertilizers may be sown upon wheat any time during October. The preparation of guano, dried blood, potash salts and gypsum, described in the circular of the Mapes Formula Company, will be an actively effective fertilizer for this season, and none but an active one should be used now.

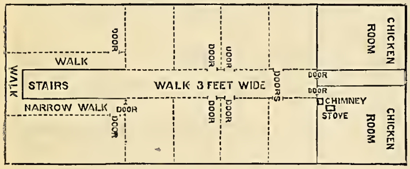
Poland Chinas in the East.—"W. L. M., Newton, N. J. There is no reason why Poland China pigs should not be kept in the East and South as well as in the West, but on the contrary, many reasons why they should be, where rapidly growing animals are desired. Hitherto there has been some difficulty in procuring pigs of this breed in the Eastern part of the country without sending very far for them. Now, Eastern breeders are turning their attention to them. We learn that Frank Petit, Salem, N. J., is breeding them.

Fertilizers for Nova Scotia.—"R. D. M.," Nova Scotia. In your locality where fish products and wood ashes are easily procured, these may be made the basis of a good and cheap fertilizer. For instance, spread half a ton of fish guano, or three or four wagon loads of fish refuse, upon each acre, and cover it with a light furrow. Then spread broadcast as much unleached wood ashes as can be afforded, up to 50 or 60 bushels per acre, and with it spread 200 lbs. of ground gypsum, or land plaster, per acre. Then harrow the ground and sow the seed. If this is done every four or five years, and a clover stubble plowed under in the same time, your land ought to keep in fair order.

The American Veterinary College.—A correspondent from Providence, R. I., favors us with an account of a visit to the American Veterinary College and Museum on West 54th street, New York, of which Dr. Liautard is President. Visitors are cordially received and can see much to interest them. The College can accommodate 50 students. The dissecting room is in the basement, and here the anatomy of domestic animals is practically illustrated. On the first floor is the instrument room, where all the mechanical appliances needed in surgery are kept; the operating room, stocks, and an apartment for post mortem examinations are also on this floor. On the second floor are a number of roomy box stalls, a dog kennel, the pharmacy or room for keeping and dispensing drugs, and the house surgeons apartments. On the third floor is the room where anatomical specimens are prepared and mounted, and chemical and microscopic examinations are made; and also the lecture room and museum. In the museum are a large variety of specimens, such as skeletons and preparations illustrating the normal muscular, nervous, and circulatory systems of animals, as well as abnormal specimens taken from diseased subjects. Owners of stock and intending students should become acquainted with this valuable institution by paying it a visit.

Fruit Humbugs.—"A. S. D.," Mt. Vernon, Ind., asks: "Are not self-pruning grape vines, Utah Hybrid Cherries, and first class peaches that grow only from the pits, humbugs?"—The first and last are most decidedly humbugs too gross to deceive any one who knows anything about fruit. There is a cherry called "Utah Hybrid," which we have not fruited. Mr. P. J. Berckmans, than whom there is no better authority, says that while worthless as a fruit, it may be desirable as an ornamental shrub. Whether this is a humbug or not depends upon the representations made concerning it.

Mr. Kinney's Poultry House is described in full on p. 373 of the present number, and a perspective view of it is given there, while on the following page is a plan of the lower floor and the "runs." A plan of the upper floor, which should have also been given, was accidentally omitted, and there is no other way of supplying the lack but to give it here, referring for a description of this plan to the article elsewhere.



SECOND FLOOR OF MR. KINNEY'S POULTRY HOUSE.

North Carolina.—"J. D.," Portland, Conn. Mr. S. T. Kelsey, formerly of Kansas, now at Highlands, Macon Co., N. C., reports favorably of the country. From our own knowledge of that locality, which is in the mountains of the Blue Ridge, the climate is healthy, the water excellent, the soil rich, the temperature cool, but markets are distant, money is scarce, and the lands consequently cheap. But then cheap lands are cheap because there are some inconveniences attached to them. You can not have cheap land that is good, and all the advantages of a thickly settled country together. Yet, by going to the Southern States in colonies, the inconveniences which are at first felt will be soon overcome.

Iron Dish Cloth.—"L. H. M." We wrote according to address given. Letter is "Returned for better direction."—Give proper address.

Drainage of a Cellar.—"J. Y. A.," Taunton, Mass. There is no way to free a cellar from moisture but to carry off the water by a drain that is at least one foot or more deeper than the cellar floor. To free the walls from dampness apply either of the methods described in the *American Agriculturist* for August.

The Best Grain Drill.—"R. J. H.," We cannot say that any one of the good drills is the best. There are always differences of taste which cause one person to prefer one machine before another. We cannot say that we know which is the best after having tried several. Any one of those referred to in our advertising columns will be found excellent, and all have attachments for fertilizers.

Economy of Cutting Corn.—"H. Q. A.," Beaufort Co., S. C., describes the Southern manner of harvesting corn as follows:—"When the corn is glazed we 'pull fodder' (strip the leaves). As soon as the corn is dry enough to shell, or keep in bulk, it is pulled from the stalk and thrown in 'heap rows'; the wagon passing between with hands on both sides to load the wagon; it is then hauled home to the lot, thrown in a pile, shucked, the corn put in the crib, the shucks in pens, or houses prepared for them. Sometimes the corn is 'slip shucked' on the stalk, or a great part of the shuck is left for the cattle. It seems to be a great deal heavier to cut and handle the corn stalk and fodder all at the same time, or are you compelled to cut the corn to prevent its being bitten by frost? I want to know the best way and do it."—In some parts of the Northern States the fodder is of almost as much value as the corn; it is therefore carefully harvested and saved. It is questionable if this plan would pay in the South, and yet as fodder is of increasing value there, we incline to the opinion that it would pay to save the whole fodder to cut up for feed in the winter; or at least to sow some fodder crop such as turnips, cabbage, or rape, among the corn at the last working and then feed it along with the standing fodder. What may be advisable in the Northern States may not be so in the South.

Awards at the Centennial.—"R. J. H.," Bedford, Ohio. There were no *first* awards given at the Centennial; or it may be said, with equal truth, that all the awards were first ones. because there were no second ones. Each article exhibited was awarded some sort of a diploma or medal; all claims that any exhibitor received a first award or any special honor over any competitor are misleading.

Treatment of Fractures in Animals.—W. C. Coleman, M. D., Latrobe, Pa., writes in regard to our remarks on his recent communication headed as above: "I purpose doing away entirely with the sling. That is the main point. The sling is close confinement like the fracture box for man. The "Plaster of Paris" dressing, as I recommend it, is intended to do away with the sling wholly; and from more recent trials of the dressing, am quite sure my ideas are correct. The dressing must be so applied as not to interfere with bending the knee either behind or in front, and then no sling will be required, no matter how 'nervous' or vicious the animal may be." [For small animals the dressing is ample. But after all, slings cannot be dispensed with, when the patient is a large, heavy or unruly animal, that frets with the pain and irritation of the wound, and will tear the dressings with his teeth if permitted, and if prevented will paw and kick. The treatment must be necessarily adapted to the character of the patient; and in some cases it would not be safe to trust wholly to the dressings however rigid they may be, as they would not prevent pressure or percussion of the fractured bones when the animal is restless or violent, and then recovery would be impossible or very slow.—It is wise to use every precaution in surgery.—ED.].

Deep Can Setting.—"R. M.," Kane Co., Utah. The Cooley System of setting milk promises better results than any other system of deep setting we have tried. It is described and illustrated on page 376.

A Woman's Success at Farming.—The farm which has been awarded the first prize of the English Royal Agricultural Society the present year, is occupied and managed by a woman, the widow of the former occupant. The family have now been tenants for 36 years. The condition of the farm was very highly spoken of by the judges, who declared that it was "like a great market garden." Its extent was 242 acres. The rotation was grass, potatoes on sod, wheat, barley or oats seeded to grass, which brought the course to the beginning again. Fteen men and boys were constantly hired, and what is strange in these days of machines, not one of these—not even a thrashing machine—is kept on the farm.

Ventilation Under an Ice-House.—"Winchester." If a current of air is permitted to enter beneath an ice-house the ice will melt very rapidly. There should be no ventilation beneath, but the floor of the ice-house should be of gravel or sand; if it is not naturally drained, a drain with an air-trap shaped like an S should be made, which will let the water escape, but which will keep the air out.

Hogs in Manure Cellars.—"H. J.," Winchester. N. H. We do not approve, in any case, of keeping hogs in manure cellars, as it is productive of disease. No more effective method of communicating diseases of the intestines could be practised than this, as the excrement from a diseased animal is virulently poisonous when swallowed by another one. Nine tenths of the so-called hog cholera is doubtless directly or indirectly caused by permitting hogs to devour the droppings of cattle that are diseased, although these may not show any conspicuous signs of disorder.

Disease Among Sheep.—"J. W. P.," Marshall, Texas. When the lungs (or lights, as they are sometimes called), are found to be filled with mucus and froth, after death, it is an indication that the sheep have suffered from parasitical worms in them. These may, if this is the case, be found by searching among the froth. They are like pieces of white thread two or three inches in length, hence they are called *Strongylus filaria* or thread-like strongles. The remedy for these is to give repeated doses of turpentine (a tablespoonful at a time), and to move the sheep to fresh pastures where sheep have not been previously kept.

Lime for Cloddy Soils.—"L. A.," Akron, Ohio. Lime has a very beneficial effect upon hard, cloddy soils, and loosens and opens them very much, especially when they have been drained. Apply evenly, 50 bushels, per acre, broadcast. Double this quantity has been used with good effect upon heavy clays or mucky soils.

Farming without Manure.—The annual sale of the growing crop, of Mr. Prout, an English farmer, who uses only artificial fertilizers, keeping no live stock and making no manure, has this year realized a full average. One field, which bore its tenth successive crop of wheat, was estimated at 48 bushels per acre and sold for $70.62½ cents per acre, the purchaser cutting and removing the crop. The fertilizers most largely used are bone manure and "dissolved guano," which is the same as the rectified guano sold in this country. $12.50 per acre is expended in fertilizers.

The Bit for Self-Sucking Animals.—"C. B.," Easton, Md., writes: "I have just tried the perforated bit described in the *American Agriculturist* for November, 1876, on a stubborn calf one year old. It works like a charm, and is cheap at fifty cents, the price I paid the blacksmith for making mine."

Keeping Butter.—"T. A. G.," Livermore, Col. To keep butter in sacks, these, when filled, should not be packed in dry salt, as the air can then have access to the butter, the dry salt being porous. If the sacks are packed in brine in a barrel, and headed up, the butter will keep for a year or more, if it was good when packed.

Temperature for Churning.—"L.," Colorado. Cream should be 60 to 65 degrees before churning. If at a lower temperature, longer time is required to bring the butter. If kept at 50 degrees or less, cream should be brought where it will become warm enough for churning.

Export of Beef and Mutton.—During the hot weather the export of meat to Europe has somewhat fallen off; but that of live animals has greatly increased. The English papers, referring to this business, report that it has not, so far, reduced the price of meat there, and thus has not interfered with the interests of graziers and farmers; while it has had the beneficial effect of preventing an increase of the retail prices, and has thus been greatly helpful to the poorer class of consumers. The successful transit of many hundreds of animals without one death having been reported, will act as a great encouragement to the trade.

Cure for Garget in Cows.—"R. H.," Piatt Co., Ill. Effort should always be made to prevent garget, by proper management of the cow, previous to the birth of the calf. If the udder springs freely, and has any tendency to hardness, we should give one ounce of saltpeter, which would act on the kidneys and as a febrifuge. This would relieve the udder, but if one dose does not act, we would repeat it the second day, or for two or three days, until the udder becomes soft and cool. If there is any milk in the udder, this should be drawn away. The cow's feed should be very light and laxative. When the cow's system has been freed from fever and cooled down, the danger will have passed, if she is kept reduced somewhat in condition, until the calf is dropped. Then, if the udder becomes hard, it should be bathed in warm water several times a day, and after the bathing should be vigorously rubbed with the hand, and ammonia water applied. and rubbed in. The saltpeter may be given as before, until the feverishness has been removed. It is well to allow the calf to suck the cow.

Bloody Milk.—"W. W.," Richmond Co., Va. This trouble is due to a congested condition of the udder. The remedy is to give a strong saline purgative, such as 12 to 16 ounces of Epsom Salts, and bathe the udder frequently with cold water, afterwards rubbing it with spirits of ammonia. Keep the heifer very quiet.

Air Compressors.—"B.," Norfolk, Va. Machinery for compressing air, and air engines, are made by the Norwalk Iron Works, South Norwalk, Conn. There is a wide scope for using compressed air stored by the power of windmills, in agricultural operations, and there is no doubt that this method of propelling farm machines, pumping, thrashing, etc., might be made exceedingly safe, simple, convenient, and economical.

To Keep Flies from Annoying Cows.—"D. A. G.," Cynthiana, Ky. Our plan to prevent annoyance to the cows during milking in fly time is to have a pailful of carbolic soapsuds, and before the milking is begun, the cows flanks and legs are sponged over with it, leaving it to dry upon the skin. This keeps the flies at a distance, at least for the time of milking. and is grateful to the cows which have a rest for that time, if not longer.

Impaction of the Rumen.—"W. A. C.," East Berkshire, Vt. When a cow is kept in a dry pasture in which the herbage is dry, weedy, and innutritious, she begins to suffer from indigestion. In time the stomach becomes filled with undigested coarse matter, the bowels become torpid and loose, alternately, the kidneys becomed inflámed, and unless relieved, the animal dies with all the symptoms of redwater, or the so-called Texan fever. The manner of prevention is obvious. As soon as the animal, which has been exposed to the conditions mentioned, appears to be sick, give a copious drench composed of one pound of Epsom salts dissolved in two quarts of warm water, sweetened with molasses. In your case catechu and opium aggravated the trouble; and had the linseed oil and soapy water injections been given earlier, the cow might have been saved. Law's "Veterinary Adviser" is perhaps the most useful hand hook for a farmer, it being plain, simple, trustworthy, and very complete. Price $3.00.

To Improve Stony Grass Land.—"A. H. B.," Troy, Vt. Stony meadows can be improved in a better manner than by plowing and turning up the stone. They should be harrowed thoroughly until a fresh surface is made, seed should be sown, and apply a dressing of 150 pounds of guano, or artificial grass fertilizer, per acre. By giving for two or three years a fair dressing of compost or fertilizer, the meadow will be brought into permanent and good grass. In choosing the seed, at least one bushel per acre of Kentucky Blue Grass should be sown with the other kinds.

Grain for Pigs.—"G. F.," Deming, Ind. Corn is not a sufficiently nutritious food for pigs except for fattening only. For growing pigs there is nothing better than bran with the corn, and milk if it can be procured. Milk and equal parts of bran and corn meal will make a good food for pigs. If grain has to be grown for the feed, we would advise ry as the best and easiest to be raised.

When to Sow Red Top.—"A. H. H.," Moline, Ill. In sowing red top on moist land we have succeeded best when the seed was sown in the spring as early as possible after the land was free from surface water; or when this has been too late, we have had a good catch by sowing early in the fall on the dry soil. In the latter case the seed does not germinate until the fall rains come, when it is not generally in danger of drying out. We have lost seed the present year by sowing it late in spring; it started into growth, but a dry spell destroyed it. Two bushels of seed per acre is required.

Dimensions of Home Made Corn Sheller.—"Subscriber," Clear Water, Fla. The diameter of the corn sheller described on page 296 (August), may be 20 to 36 inches as desired; the discs must be so far apart as to permit the cobs to pass through, but so close as to tear the corn from the cobs, this would be from 1¼ to 1¾ inch; the nails should be about one inch apart, and the opening at the bottom may be six to 12 inches, the size of this is immaterial, if it is only large enough.

Hog Cholera.—"J. R.," Napoleon, Ohio, criticises Mr. Coburn's statements in his new work on Swine Husbandry, regarding hog cholera, stating his opinion that the disease is contagious, and no matter what the previous care or neglect may have been, a hog exposed to diseased stock will be sure to have the "cholera." He believes isolation to be the only preventive.—Perhaps our correspondent has not yet read the book, and it is not fair to criticise it from reading only a brief notice of it in a paper. Neither Mr. Coburn nor any other sensible man will probably deny that the statement made in the first sentence is generally true. But as to the latter, most experienced persons would add something to it, viz., that isolation is the only preventive *against contagion.* Why is cholera practically unknown in the Eastern States where hogs are better managed than in the West?

How to Feed all the Hay, Straw, etc.—"A Young Farmer." Lancaster Co., Pa. All the hay and straw on any farm, whatever size it may be, may be fed during the winter without overstocking the farm in the summer time. The stock should be purchased in the fall and fed and fattened on the hay. straw, and roots raised, with some kinds of purchased food, such as bran, oil cake meal or corn, and sold in the spring. In this manner the feed is used to greater profit than in any other way, and the supply of manure is very greatly increased and enriched. .Nothing that can be used as feed should be thrown into the manure heaps, when any other materials, even sand or earth, can be procured. Leaves, road scrapings, swamp muck or ditch scourings are worth as much for manure as straw; the land is not robbed if the straw is fed, but a gain is made through the bran or meal fed with it.

A Good Cow.—"W. F. W.," Bridgeton, N. J., sends a record of his cow, a ¾-grade Jersey with ¼-Short-horn. She has given an average of 18 quarts of milk, daily, for 5 months, gaining 10 pounds in weight during that time. The cow is 7 years old, and at three different trials one pound of butter has been made from 8 quarts of milk. She has given her weight in milk three times over in 5 months.

Poisoning by Ear-rings.—It has been stated in Europe, that serious diseases of the ears and eyes have resulted from the use of ear-rings made of copper. Those ridiculously cheap articles—it is not fair to say of jewelry or of ornament, for they are neither—those ear-rings and such trash of which whole sets can be purchased for a fraction of a dollar, and are worn by persons who foolishly think that such stuff improves their appearance, must be largely of copper. If a sense of the fitness of things will not prevent the wearing of such, it is to be hoped that the fear that it may poison and seriously injure those who wear it, may.

Mold in a Milk House.—"W. McK.," Montgomery Co., Pa. Although an underground milk house may not seem damp, and may be well ventilated, yet the presence of an adjoining ice house will certainly give rise to moldiness, and this will affect the milk. To get rid of the trouble temporarily, close the milk house tightly, and burn four ounces of sulphur in it upon some live coals. Keep it closed for a few hours and then open it and air it. To remove the trouble permanently, the ice house must be got rid of.

Caraway is a biennial plant grown for its aromatic fruits, or seeds, which are only borne the second year. "C. G. G.," Manhattan, Kas., has a bed of it, the first year from the seed, and wishes to know if it will be necessary to take up the roots and keep them, like beets, etc., through the winter, and set them out again in the spring. The caraway is a notably hardy plant, and so far as cold is concerned, the roots may be left in the bed. In some of the older States, and even in Canada, it has become more or less naturalized, the plants surviving a Canadian winter. There is more danger that the roots may decay, if in a wet place, and the winter is mild, and provision should be made for carrying off the water.

Disorder of the Kidneys.—"A. L.," York, Pa. A difficulty or inability to move backwards, and stiffness in the hind quarters, accompanies disorder of the kidneys. When it is not accompanied with tenderness of the loins on pressure, the disease is slight, but should be treated at once. The treatment is to open the bowels freely with doses of olive oil or raw linseed oil, rub the loins with mustard plaster, give copious drinks of linseed tea and an ounce of gentian daily in the food. All such irritant diuretics as turpentine, rosin, or saltpeter, should be avoided. A sheepskin dipped in hot water, and strapped over the loins, would be beneficial.

Weight of a Cord of Manure.—"J. J. L.," Turner's Falls, Mass. A cord of manure contains 128 cubic feet, and a cubic foot of manure, which contains 75 per cent of water, weighs about 58 lbs.; thus a cord of manure will weigh nearly 3½ tons. There is no appreciable difference between the weight of horse and cow manure, except when fresh; then the cow manure is somewhat heavier, because it holds more water. When they are decomposed they will weigh about the same.

How to Use Bean Meal.—"M. T. B.," Lexington, Mass. Bean meal is readily eaten by pigs when cooked or scalded, lightly salted and fed cold. If the pigs do not eat it with relish, it may be made into a slop with milk or mixed with corn meal. Beans mixed with corn form a very nutritious food.

Bean Harvesting Machine.—A Canadian journal, in reference to a statement in the *American Agriculturist*, that there was no machine in use for harvesting beans, remarks that such "a machine is in use in Canada, operated by horses, by which several acres of beans are harvested as neatly as if done by hand." We do not clearly understand the latter part of the sentence, but the fact, *if true*, is interesting. We referred to the beans commonly grown in this country, and not to the English beans, which grow with stiff upright stalks three feet high. These we were aware are sometimes harvested by a machine, but this machine would be no more useful here than a mowing machine. If a machine is made that harvests our common field bean, we will thank the manufacturer for a description of it.

An English Laborer's Day's Work.—We notice in the English papers occasionally some very hard cases of excessive working of laborers. Recently a farm laborer was brought before a magistrate on a charge by his employer of refusing to work. He had been to work from 5 in the morning, when he fed his horses, to 7.30 in the evening, when he refused to draw two more loads of hay. The magistrate wisely discharged the man, thinking that he had done a fair day's work. The man's wages were $3.25 a week with house free. Bad as many consider the condition of laborers in America to be, yet with at least $6 a week and provisions, etc., much cheaper than in England, our laborers in reality are better off than their brethren in any other country in the world.

Clean Out the Barn Yards.—At this season every particle of manure should be taken out of the barn yards and the surface scraped clean. There is leisure to do this now which cannot be had in the hurried time of spring. Instead of a wagon box, use loose planks for bottom and sides; these may be removed or turned over one by one from behind, without stopping the team and the manure dropped along a row through the field. One hand should remain in the field to spread it upon each side of the row, and as he can cast it twelve feet on each side, the rows may be 25 feet or a rod and a half apart. If each load is dropped in a line 80 feet long, there will then be 20 loads to an acre; or if 160 feet long, 10 loads to the acre. Two wagons should be used, one going to the field while one is being loaded in the yard; two men can be loading while one is drawing, unless the haul is a long one, and it is an easy matter to lift the double tree from the empty wagon on to the loaded one.

Bee Notes for October.

BY L. C. ROOT, MOHAWK, N. Y.

The honey yield for the present season is now ended. To ascertain whether bees have sufficient honey for winter, leave no room for doubt, but place each hive upon the scales, and find its exact weight. If bees are to be wintered in-doors, each hive should have 20 lbs. of honey. If to be wintered out of doors, 30 lbs. should be allowed. It will be necessary to know the weight of the hives and combs, to find the exact weight of honey. If movable frame hives are used, combs in heavy and light hives may be exchanged, both being benefited. Whatever deficiency there may be after thus equalizing them, must be supplied by feeding. Those who have read these "Notes" for the past year, will remember that many bees were lost last winter, from being too heavy with honey, there not being sufficient empty comb for the bees to cluster in compactly. If any hives are in such condition, and the heavy combs are not needed in lighter hives, combs filled with honey should be removed and replaced with empty ones, or the honey may be removed with the extractor, and the empty combs put back.

At this season all upward ventilation should be closed, and the entrance, if large, should be contracted.

Questions and Answers.

MOVING BEES.—"I wish to move my bees to a new location, about 100 feet distant from the present one. Can it be done safely, and when is the best time?"....The best time would be in the spring, when they are removed from winter quarters, yet it may be done at any season, by removing them only about two feet at a time, and allowing them to work freely from each hive, at intervals, before moving again.

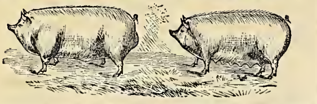
EXPOSING HONEY.—"Is it necessary to put out honey for bees to eat after taking honey from a hive to keep other bees from robbing it?"....Decidedly the reverse. In all operations, at this season, very great care should be taken not to expose honey, or in any othey way to induce robbing.

BEES IN TREES.—"I have a swarm of bees in the hollow of a tree. Will it be best to leave them in the tree, or remove them to a hive?"....If you are not experienced in handling bees, I would advise cutting off the tree. above and below the bees, and after nailing a piece of wood on each end, set it upright in a sheltered place, After it has given off its swarms in the spring, the attempt may be made to transfer the colony to a new hive.

National Beekeeper's Convention.

The beekeepers of this country are to hold a Convention in New York City, commencing on October 16th. Exhibits of honey and of beekeeping supplies generally, will be made at the Fair of the American Institute, and the meetings of the Convention will be held at the Cooper Union Hall.

Lewis' Lancashire Swine.



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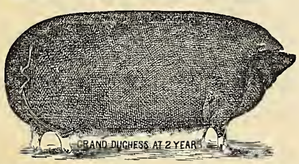

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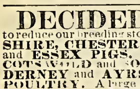

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A Saponaceous Compound with Cresylic and Carbolic Acid.

For Preventing and Curing the Scab and all parasitic diseases of the Skin. Will destroy Lice, Ticks, Fleas, &c.

Is beneficial to the general health and condition of the flock. The use of this **DIP** will cleanse and whiten the Fleece—also increased the growth or weight sufficient to be a full equivalent for the cost of the Compound.

This Preparation is Warranted to be **entirely harmless** and **free from all poisonous** Compounds, and will positively do all that we claim for it. Put up in packages of 1, 5, 10, 50, 100, and 200 pounds.

Buchan's Cresylic Ointment.

Certain Death to the Screw Worm or Grub.

It not only destroys the worms, but cleanses and quickly heals up the offensive sores made by it.

No fly will attack a wound to which this preparation has been applied. Sheep which rarely recover from the attack of the worm under the ordinary treatment, are quickly cured by this application. In solution, this ointment will be found invaluable for healing Saddle Galls, and all abrasions of the skin of animals.

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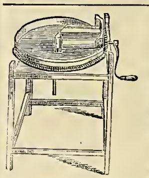

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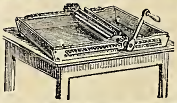

The most Effective, Simple and Convenient Yet Invented. **Works 30 lbs. in less than 5 minutes,** thoroughly working out the buttermilk and mixing in the salt. Send for circular and price lists.

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TO COLOR BUTTER!

Our Perfected Butter Color is far better than carrots, Annatto, or any other color, at one-fourth the cost, and no work to use. It gives a splendid June color, and never turns red. Thousands of testimonials from the very best dairymen. Circulars free. Samples to color 50 lbs. 10c. Try it now.

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Lubricating Castor Oil.

On receipt of $6.00, we will deliver at nearest railway station to party ordering, 5 gallons of **Pure Castor Oil,** for lubricating **Agricultural Machinery, Carriage Axles,** and **Harness Oil,**—excluding territory west of the Rocky Mountains.

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High Class Poultry.

Light and Dark Brahmas, Partridge and White Cochins, Brown and White Leghorns, Houdans, and G. S. Bantams. For sale at all seasons, at reasonable prices. Eggs, securely packed in new baskets, $3.00 per 13, or $5.00 for 26. Please state what you want. Send for Circular.

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A few choice Chicks for sale of **Buff** and **Golden** "Polands," from my importation of 1877.

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Silkworm Eggs, warranted free from *pebrine.* Three kinds—White, Yellow, and Imported Japan. Medal awarded at the Centennial. Best kinds of Mulberry trees for forest, ornament, fruit, or silkworm food. Book on Silk Culture. Send for price list.

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IMPERIAL EGG FOOD.

FOR
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POULTRY.

LAYING HENS,
YOUNG CHICKS,
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and
TURKEYS.

Trade Mark secured by Letters Patent.

WILL MAKE HENS LAY.

Prevents and cures all common ailments and increases the profits of the Poultry Yard from 50 to 100 per cent. On application we will send circulars and testimonials from the best authorities on Poultry Matters in the country. Packages sent by mail on receipt of 50 cents for trial size. $1.00 and $2.00 for large packages.

For sale by Druggists, Grocers, and Postmasters.

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CREEDMOOR, MID-RANGE, SPORTING and HUNTING.

The Best Gun for all purposes ever manufactured. For full description, with price list, address

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STEVENS' PATENT

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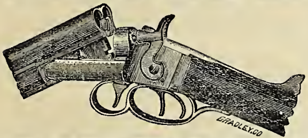

Double and Single Barrel Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunter's Pet Rifles. Special attention is called to our Double Breech Loading Guns. They are simple in construction and manufactured with great care from the very best material. They are pronounced by experts **"the best gun in the market for the money."**

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Secured by letters patent.

These pumps have enormous power, and are for the house or for **out-door wells** of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

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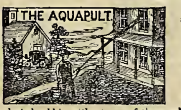

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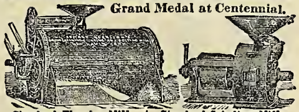

Standard Flouring Mill.	Standard Grinding Mill.
Scourer, Grinder and Bolter.	For all substances wet or dry.
8 feet long by 4 feet high.	Built of burr stone and iron.
Runs with belt 4 inches wide.	For heavy or light power.
Flours 3 to 6 bushels per hour.	Capacity of 20 inch stones.
Has double ventilating bolter.	Equal to any larger size.
For flour, middlings and bran.	Thickest French burr stones.
Gives every one his own grist.	Double discharge spouts.
Makes the best flour and yield.	Adjustable babbitt boxes.
Is a reliable flouring mill.	Solid self-adjusting burrs.

Centennial Judges award medal on ☞ *these portable, vertical mills for solidity and good workmanship, economy and adaptability.* ☜

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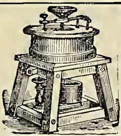

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Successors to Jas. Bradford & Co.
MANUFACTURERS OF
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Also, dealers in Bolting Cloths and General Mill Furnishing.
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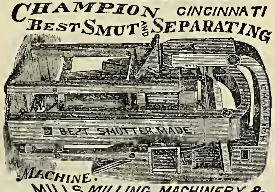

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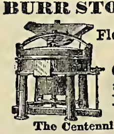
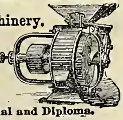
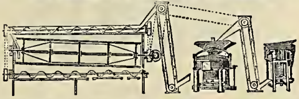


Catalogue and Price List Free.



The Centennial Prize Medal and Diploma.



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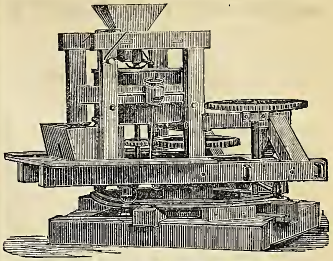
For Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Send for Circulars and Judges Report. Pay for itself in a few weeks. D. KAHNWEILER, 120 Centre St., New York.



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Portable Grist Mill.

Horse-Power and Grist Mill combined.
Friction avoided—Power & Space economized.
A long felt Want Supplied.
Every Farmer his own Miller.

This mill, with twenty inch stones, worked with two horses, will grind five bushels of fine meal or flour per hour. It is simple and durable in construction, and can be easily managed by any farm hand. It occupies no more space than is required by any ordinary horse-power.

Price of the combined Mill and Horse-Power, **$250.**

Circulars with full description sent upon application.

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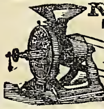

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FARM & FEED MILLS.

Bone, Drug, and Spice Mills. 10 sizes, for Hand or Power. Conical French Burr Stone Flouring and Corn Mills.

☞ Were awarded highest Medal and Diploma at Centennial Exposition.

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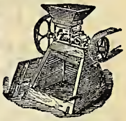
Address, **L. J. MILLER, 181 E. Front St., Cincinnati, O.**

Premium Farm Grist Mill.



Grinding parts are of **Steel,** Grinds all kinds of grain rapidly. Is durable, simple, and cheap. Is suited to all kinds of horse-powers.

Send for descriptive Circular.

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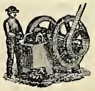

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Crushes all hard and brittle substances to **any required size.** Also, any kind of Stone for Roads and for Concrete, &c. Address BLAKE CRUSHER CO., New Haven, Conn.

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No cold or sore fingers, if used with gloves or mittens. Can be used without gloves or mittens, if desired. Will last a life time. Taken 6 Premiums. One sample 25 cts.; two for 45 cts.; 5 for $1.00.

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Guaranteed the best Hand Shellers for the money in the market.

Price $5.00,

OVER 12,000 NOW IN USE.

Every farmer should have one. Shipped by Express or Freight on receipt of price. Send for Descriptive Circular and terms to Agents.

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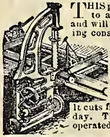
SAW MILL FOR THE PEOPLE.



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Saves labor and money. It is simple; the grappling positive; it runs on friction rolls, hence will come back on slight incline. The track is inexpensive; the carrier costs but a trifle; many hundreds are in use. No trouble about getting over high beams, or to the end of deep bays. Hay is dropped where wanted, and the work of mowing is reduced. **Track should be put up now while barns are full.**

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The most powerful self-acting brake made. Fully endorsed by every farmer and wagon-maker who has seen it. W. A. Armstrong, Sec'y Elmira Farmers' Club, writes: "A Committee of the Elmira Farmers' Club, consisting of Chas. Heller, John Bridgman, D. T. Billings, S. M. Carr, and M. H. Thurston, gentlemen fully competent to make intelligent judgment, gave the brake careful trial Aug. 21st, and reported unanimously: It is the best brake we have ever seen—prompt in its action—effective when required, and is exceedingly desirable for all farmers on hilly farms." See Illustration in Aug. *Am. Agriculturist* for 1876. Sample brakes complete for farm wagons, $5.00. Good salesman wanted.

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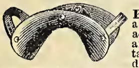

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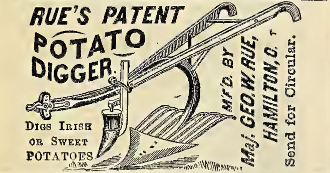

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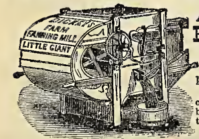

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No good Farmer can afford to market dirty grain.

A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

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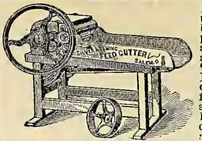

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Man'd by **Silver & Deming Mfg Co., Salem, Ohio.**

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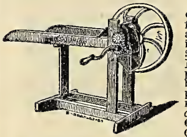
THE N. Y. PLOW CO., 55 Beekman St., N. Y.



Do you want for your own use the best **Self-feeding Hay, Straw, and Corn Stalk Cutter** in the market; price from $11 to $40; or the best **Lever Feed Cutter,** price from $7 to $10; or the best **Vegetable Slicer,** price from $10 to $15. Need not be paid for until *tried and found satisfactory.* Circulars free. GALE & CO., Chicopee Falls, Mass.

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Baldwins' Fodder Cutter and **Clark's Lever Hay Cutter. Silver Eagle Corn Sheller, Deere Steel Plows,** and a full line of Farm Machinery for *Fall* and *Winter* use.

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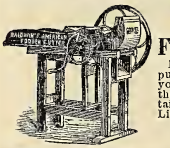

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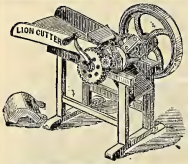
Best in the market. Don't purchase any other kind until you have seen and examined this. Send for Circular, containing Description and Price List.

C. PIERPONT & CO.,
Manufacturers,
New Haven, Conn.



Lion Feed Cutter,

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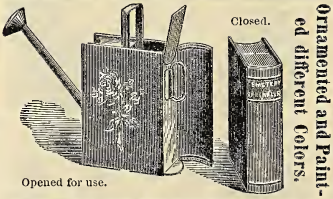

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An elegant **New, Square Grand Arion Piano.** 7⅓ Octaves, Rosewood, Four Round Corners, Extra Carved Legs, Arion Scroll Desk and Carved Lyre. The List Price of this elegant instrument is $850, but it will be sold at a **very Large Discount for Cash.**

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For only 66 Subscribers

will be presented any one of *Four* First-rate $50 articles, viz., No. 1, a Splendid Tea Set; or No. 68, a First-rate Gun, or No. 82 a First-rate Sewing Machine, or No. 97, Twenty-one large, finely bound Volumes of this Journal.

A Hint to Merchants.

Several dealers in Miscellaneous Goods, in Boots and Shoes, in Implements, etc., etc., subscribe for **50 to 700** copies of the *American Agriculturist*, at $1.10 a year, if they are sent to them by mail post-paid, or $1 a year, if they come by express, or as freight, unpaid, and they distribute them by one of the following methods: Some give a copy a year to the first fifty or more customers, buying $10 or $15 worth of goods. Others have the papers come as freight or by express, and supply them to customers at a small charge. This answers as a sort of premium to customers, and brings them to the store at least once a month to get their papers. One firm in North Carolina has taken for this purpose 500 to 700 copies regularly for many years past.—A Shoe Dealer in Ohio has given the paper a year to the first 100 persons, who bought $11 worth of his goods, equal to a premium or reduction of ten per cent, and he has found it to *tell.* The first dealer in any village who adopts this plan, will find a rush for his goods.

A Hint to CLERKS.

"....Enclosed are five subscribers and $8, which completes my Premium List of 44 names for the American Watch, which you will please forward to my Brother ——. I have gathered these subscribers by keeping a copy of the *American Agriculturist* convenient to show to callers, and by gathering a few names after closing the store at night. Part of them are new names, as you will see. The Watch I obtained for myself in a similar manner last year, has proved a very valuable one and useful to me. With my small salary, and a mother and sister to support, I could hardly have afforded to *buy* one. Mine I got free without money and without interfering with my duties to my employers. The one now obtained is to be a *present* to a younger brother, who is an apprentice as yet, and can not buy one. I am next going to get up a club for a Set of Forks for my Mother, and then a Sewing Machine for my Aunt."

[This is only one of many clerks who carry a nice American Watch obtained in the same way. Thousands of others may do the same *now.* See pages 401 to 408.—*Publishers.*]

Hint to CONDUCTORS.

"....The enclosed fifteen names and $24 make up 233 names I have sent you thus far. You may send me the Premium Sewing Machine, which, in addition to this, will leave nine names to my credit on account of the next premium. I shall secure at least $300 worth of premiums. One of the two Sewing Machines received from you as premiums, I sold for full price in cash to a friend who wanted one. The other is doing good service in my own 'shanty.' I intend to secure your Premium Tea Set for my better half in time for her next birthday....." [This is from a Conductor of a local train, running 56 miles. He carries a copy of the paper with him, and as occasion serves, shows it to some of the passengers he is acquainted with, and he uses some of his off-hours in securing others. His salary is $720 a year, and he will add $300 more in this way. Other R. R. Conductors have done considerable in this way, and thousands of others may do the same.—*Publishers.*]

Hint to Farmers' Clubs.

A few Farmers, whether in an organized Club, or not, can, by uniting their efforts, soon raise a list of subscribers large enough to get *free* one of the valuable **Farmers' Libraries,** described in Nos. 98 to 102, page 408, and have the books kept for general use. Ten to Thirty Dollars' worth of such Books in a neighborhood will do a great deal towards general improvement, and be useful to every individual. Let some enterprising man start the matter, and ask the aid of a few others, and the thing will soon be done. Every one who gets the paper for a year, will be amply repaid for its cost; and the Premium Books will be useful to all, and be so much extra.

A Hint to CHURCHES.

Church Fairs are often necessary, yet onerous, for beside much labor and trouble, the workers usually have to be the principal purchasers. Suppose half the time and effort be expended in getting a larger or smaller list of subscribers for the *American Agriculturist.* Every subscriber will get the full worth of the money, and the premium given by the Publishers will often be worth as much as the proceeds of a Fair, **Especially** if a Donation or a Present is to be given to the Pastor. See in the following pages, numbers 1, 2, 12, 14, 50, 82, 85, etc.... **A Communion Service Free.**—(PLATE COMPANY'S No. 16.)—To any Church or Congregation sending 55 subscribers to the *American Agriculturist*, at $1.60 a year, the Publishers will present a beautiful $38.50 Communion Service, consisting of Wine Flagon, two Goblets, two Bread Plates, and a Baptismal Cup, on standard, all in fine style, and heavily plated, made by the MIDDLETOWN PLATE COMPANY. For 48 subscribers, at $1.60 each, we will send a $33.00 Communion Service, consisting of the same pieces as above. (PLATE COMPANY'S No. 1,391.) A few active Men and Women can collect the required number of subscribers in two or three evenings. Every subscriber will get his full money's worth in the paper. By doing this **now,** every subscriber will get the paper 14 months for the regular subscription rate of $1.60 a year, which includes the postage prepaid by the Publishers, and the Church will have a beautiful Communion Service also.

A Hint to Clergymen.

A Pastor of a Village Church says: "....Amusing as it may seem at first thought, I find the *American Agriculturist* a decided help in my pastoral labors. I read it, and when I go among my parishioners, most of whom are farmers or gardeners, or have village gardens, I am able to talk intelligently with them about their farm or garden work, and often suggest something new to them. This brings me into direct sympathy with them." Many clergymen have received valuable articles wanted in their own household, free, by raising a club of subscribers for this Journal. (See pages 401 to 408.) Their people readily subscribe, especially when they know that by doing so they not only get the paper themselves, but they aid their pastor in getting some useful article that he or his family need. A large number of clergymen may this month secure, by two or three days' canvassing among their parishioners—a **Tea Set,** (see No. 1.) Or a Communion Service for the Church. (See hints to Churches above.) The work will be easy this month, with the extra copies offered.

A Hint To LADIES,

A very choice lot of articles will be found described on pages 401 to 408, which will interest our Lady friends. They are too numerous to refer to all of them here.—Now, not only in theory, but from what has been done, we say that a large number of Ladies can *easily* secure one or more of the desirable articles *without money cost.* Any Lady can show the *American Agriculturist* to some of her friends and others, tell them what it is, and ask them to subscribe. In a short time names enough will be gathered to secure a valuable article. One Widow Lady in this way obtained a **$650** Steinway Piano, in a little over 30 days. Another, a Maiden Lady, who devoted her time to it, secured as premiums *six* of these Pianos in a year, which she sold for cash, and received about **$3,000** for her year's work. Many others have collected in their own neighborhoods subscribers enough to get the Tea Set and other articles.—In many parts of Europe, the women do most of the ordinary business—the men are largely in the army. Our Ladies who have the ambition and energy can be just as successful. Our Premium Offers afford a capital chance to try their skill. Look over the pages 401 to 408, select the article most desired, and see if can not be obtained *free, this month.*

A Hint to P. O. Clerks.

A great number of Clerks in Post Offices have secured valuable articles from our Premium List, (see pages 401 to 408), using some of them as presents, and in many cases selling them for *cash,* and thus increasing their salaries. It is *very easy* for *every* Post Office Clerk to gather subscribers enough for the *American Agriculturist* to obtain *free* at least one of the valuable articles offered on pages 401 to 408. TRY IT.

Hints to Boys & Girls.

At least **41,000 Boys** *and* **Girls,** that is, at least *one* for every Post Office in the United States, can *make themselves happy* this month, or this *Fall,* in the *free* receipt of one or more of the very desirable things described on pages 401 to 408, (see especially Nos. 19, 25, 29, 37, 41, 48, 55, 60, 62, 85.) They can *easily* gather 3, 4, or 5 subscribers, or more. Many persons will oblige a Boy or Girl by subscribing, when working for some premium, who would turn older people away. Those too young to write, can get some one to send the names on for them. To solicit subscribers is a good exercise to develop *business talent.* Many parents encourage their children in such a work. At least one boy or girl at *every* post office ought to collect 18 subscribers, and get Premium 85. It will be invaluable to them. Many may get other Premiums, to give as presents to Mother or friends, such as Forks (No. 14), Spoons (Nos. 12 and 13). You will find many fine things as presents described. Go right to work *this* month. You can offer the paper to subscribers, now, 14 months for only $1.60, and that will help you in collecting a premium list. TRY IT. (Try it as the Spider did.)

A Hint to FARMERS.

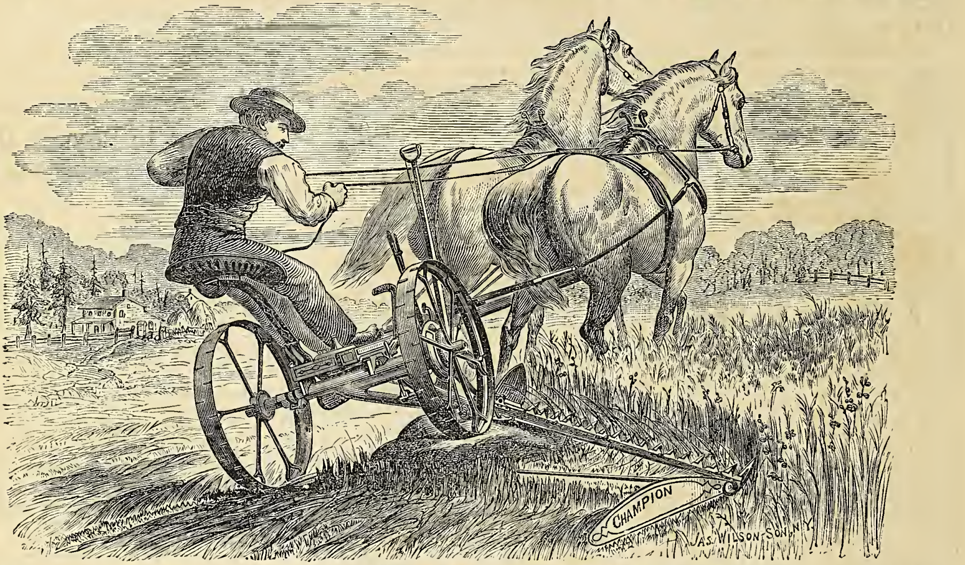
Every Farmer would like to have one or more of the Things described on pages 401 to 408, especially Number 66, or 59, or 57, or 53, or 50, or 41, or 1, 12, 14, etc. Now it will be easy to get one or more of these articles *free,* by simply stirring round evenings and rainy days, and gathering a few names of neighbors and others. The Paper will do *them* good, *far* above its cost, and for collecting these names, the Publishers will *present* to you the articles offered. **Better still even,** every farmer ought to supply himself and sons with good reading about his own business. A good Book is worth its weight in silver, in starting up new ideas and plans. Many a man has saved a valuable animal by having at hand a book on Swine, Sheep, Cattle, or Horse Diseases.——A few names of subscribers gathered will bring some of these books *free.* (See Nos. 98–102.) What better for constant reference and reading than some of the Back Volumes of this Journal. See Nos. 86–97....Remember, *first,* that a little push and enterprise will get some of the above *free,* and, *second,* that October is a good month to do it in, as the paper can now be offered to others 14 months for the price of a year's subscription.

A Good Bed for Everybody.

The two prime necessities for every man and woman are: nourishing *food* and *good rest.* These give one strength of body and mind, for any calling. The new Bed described, No. 50, page 405, is the latest and best sleeping arrangement we have yet seen. Everybody ought to have one. A multitude of people can each get one *free,* by simply collecting 19 subscriptions for the *American Agriculturist.* There are people enough in every town who would be benefited by the paper ten times its cost, and who would take it if some one would bring it to their attention. It can be done easily this month, when the paper is offered *for the rest of this year and all of* 1878, for only $1.60, including postage pre-paid by the Publishers. TRY it at once, and get the new Bed this month.

THE NEW CHAMPION REAPERS AND MOWERS.

A Wonderful Improvement in Harvesting Machinery.



The remarkable feature of these machines is the **NEW MECHANICAL MOVEMENT** for driving the knife. It possesses **more** strength and durability than any of the best systems of gearing heretofore in use for this purpose, and **does away** with **nearly all** the **noise** and **friction** common thereto; the **direct results** being **extreme lightness of draft**, and **greatly increased cutting power.**

GOOD WORKS AND GOOD WORDS.

The demand for Mowers and Reapers with this movement was so great, that the supply for 1877 was exhausted long before the close of the season, and in every instance they won the very highest commendation. Limited space prevents copying largely from testimonials, uniformly commendatory, thousands of which have been volunteered by parties who have purchased or experimented with machines during the summer of 1877. We select the following:

"Having used the New Champion in first crop and rowen, on all kinds of land, rough and smooth, sidehill and level, wet grass and dry, I feel in duty bound to say that in comparison with all other machines ever used on my place, (some half dozen,) *it is the best*.—N. O. NEWHALL, Shelburne, Mass.

"I unhesitatingly pronounce the Toronto Mower (New Champion) the best machine in use. I gave it the most severe test, mowing the heaviest swaths and the lightest upland with the greatest ease, even cutting through a large hay cock at a *slow* walk."—J. A. DELAMERE, Lot 24, Trafalger, Ontario, Canada.

"The New Champion gives first-rate satisfaction. It is particularly adapted to rough-uneven land."—S. A. JACKSON, Milton, Vermont.

"The New Champion is equal to any emergency. I have given it a severe test. No lost motion, and no perceptible wear."—MILTON DANCE, Long Green, Md.

"I cut over 100 acres of grass and grain this season with the New Champion. It works admirably on smooth, rough, or stony ground; the knife can not be clogged, the gearing is perfection, and it is the lightest draft machine I ever worked."—JEREMIAH SHELL, Evan's Mills, N. Y.

"Have given the New Champion a severe test in the thickest of wet, lodged grass, across deep ditches, amongst stones, stumps, rocks, and trees. It is a splendid machine, and the more I use it, the better I like it. It is impossible to clog it."—GEO. W. SIBLEY, Spencer, Mass.

"I mowed 6 acres of rough, stony land in less than 4 hours, with the New Champion. I would not exchange it for a dozen of the other popular machines, for it draws as easy in heavy grass, as an empty express wagon does on the road."—MARK E. HAWKINS, East Wallingford, Vt.

"With a New Champion, having a four-foot six-inch cutting-bar, we last week cut a full acre in an hour with great ease. * * * To see a mower cutting grass almost silently, and without a gear or cog-wheel visible, was something wonderful, but this was done and done well. If strength and simplicity go with direct motion, and friction and heaviness of draft are lessened by the absence of gearing, then *we have one mower which seems to surpass all the old favorites*."—*New York Semi-Weekly Times*, June 19th, 1877.

"Having used the Toronto Mower, (New Champion), I take great pleasure in recommending it. It possesses every desirable appliance that it is possible to combine in one machine."—GEO. NELLES, Cayuga, Ontario, Canada.

"My Machine cut this season 123 acres of grass, some of it in very rough, stony, and stumpy ground. It cost nothing for repairs, and I have no hesitation in pronouncing it the best I ever used or ever saw."—JOHN LINK, Cayuga, Ontario, Canada.

"The New Champion is the *best* machine I ever mounted.—L. T. SCOTT, Bethlehem, Ct.

"This season I tried the New Champion in thick bottom grass and heavy clover, with five other machines, and it did better work than any of the others."—DANIEL OFFORD, Mt. Lebanon, N. Y.

"The New Champion will do good work where no other machine can be operated."—H. K. DAVIDSON, Charlton Depot, Mass.

"My New Champion is the best machine that ever went into a field. I would not exchange it for any two I ever saw, and I am familiar with all the standard machines now in use."—J. LA PREIRE, Burlington, Vermont.

"I have used the New Champion extensively this season, and it is the opinion of all who have seen it work, that it excels all machines in use."—HENRY D. B. FREER, Gardiner, N.Y.

"The New Champion is a wonderful machine. My young and high-mettled team tried hard to break it, but could not.—WM. P. VARNUM, Dracutt, Mass.

"We cut our crop with a New Champion, with more ease to horses and driver, than with any machine we ever used. What puzzles us is to find out what makes it run with so much ease, and where it gets its power."—JOHN T. & JAMES E. DRONEBURG, Frederick, Md.

"A man will never want but one of these machines, *for it will last a life-time*."—GEO. W. HARRINGTON, Plainville, Mass.

"I have used a mower (with this movement) four seasons, and the extent of *cash out* for repairs has been *sixty-two cents*."—E. F. MAYO, Warwick, Mass.

"A most important, yet simple novelty in mechanics. The draft is remarkably light, because the absence of the usual gearing reduces the friction to a minimum. Strength and durability are secured in the highest degree. We find (after a personal trial) that this peculiar movement works in the most satisfactory manner."—*American Agriculturist* for May, 1877.

"The New Champion, for lightness of draft, and simplicity of construction, beats any machine I ever saw. No side-draft, no bearing down on horses' necks, no clogging nor choking. In a word, it beats the representation all hollow."—J HUDSON KASE, Rushtown, Pa.

Machines will be on exhibition this fall at most of the County, District and State Fairs throughout the United States and British Provinces. At every Fair held during September, where there was a competitive exhibition, from which we have advices to date (Sept. 12th), the New Champion was awarded the highest premiums.

The New Champion Reapers and Mowers are manufactured by Whiteley, Fassler & Kelly, Springfield, O., for the Eastern portion of the U. S.; by the Champion Machine Company, of Springfield, O., for the Southern and South-western portion of the U. S.; by Warder, Mitchell & Co., Springfield, O., for the Northern and North-western portion of the U. S.; by the Toronto Reaper and Mower Company, for the Dominion of Canada. Sold by L. H. Lee & Bro., Baltimore, Md.; Whiteley, Fassler & Kelly, Schenectady, N. Y.; Champion Machine Company, Cincinnati, O.; Champion Machine Company, St. Louis, Mo.; Champion Machine Company, Omaha, Neb.; and Warder, Mitchell & Co., Chicago, Ills

Table of Premiums.

[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.60 a year, and also (with a part of the premiums), at the club rates of $1.10 a year, postage included, which is prepaid in all cases *by the Publishers.*]

TABLE of Premiums and Terms

For Volume 37–(1878).

Open to All–No Competition.

No.	*Names of Premium Articles.*	*Price of Premiums.*	*Number of Subscribers required* at $1.60	*or at* 1.10
1	*Tea Set (Middletown Plate Co.)*........	$50 00	66	....
2	*Ice Pitcher (do. do. do.)*	$13 00	20	130
3	*Cake Basket.. (do. do. do.)*	$ 7 50	16	63
4	*Cake Basket.. (do. do. do.)*	$10 00	18	100
5	*Casters.... (do. do. do.)*	$ 5 25	13	55
6	*Casters.... (do. do. do.)*	$ 7 50	16	63
7	*Casters.... (do. do. do,)*	$10 50	19	120
8	*Butter Cooler (do.. do. do.)*	$ 6 50	15	60
9	*Pickle Jar and Fork. (do.)*	$ 5 00	12	50
10	*Syrup Cup with plate. (do.)*	$ 6 25	15	60
11	*Child's Cup (do.)*	$ 3 50	8	35
12	*Twelve Teaspoons (Meriden Cutlery Co.)*	$7 25	16	63
13	*One Dozen Tablespoons (do. do.)*..	$14 50	22	147
14	*One Dozen Table Forks (do. do.)*..	$14 50	22	147
15	*Ladies' Folding Pocket Scissors, (do.)*..	$ 1 50	4	....
16	*Child's Knife, Fork & Spoon...(do.)*...	$ 3 00	8	30
17	*French Cook's Knife, Fork, & Steel (do.*	$ 3 75	9	37
18	*Case of Scissors (U.S. Steel Shear Co.).*	$ 4 00	10	40
19	*Portable Writing Desk, (C. W. F. Dare).*	$ 1 75	4	....
20	*Walnut Work Box. (do.)*	$ 1 25	4	....
21	*Buck-Saw for Boys, (do.)*	$ 50	2	....
22	*Little Girl's Wash Set, (do.)*	$ 1 00	3	....
23	*Sled, (do.)*	$ 2 00	5	20
24	*Spring Horse, (do.)*	$11 00	18	110
25	*Boy's Wagon (C. W. F. Dare)*..........	$ 5 00	12	50
26	*Boy's Tool Chest, (E. I. Horsman)*.....	$ 1 00	3	....
27	*Boy's Larger Tool Chest (do.)*	$ 2 50	7	25
28	*Boy's Larger Tool Chest (do.)*	$ 5 00	12	50
29	*Pat. Magic Bellhead Pencil (Ludden & Taylor)*......................	$ 1 50	4	....
30	*Ladies' Magic Charm Pencil (do. do.).*	$ 2 00	5	20
31	*Gents' Magic Charm Pencil (do. do.).*	$ 2 75	7	27
32	*Gold Pen, Telescopic Case (do. do.).*	$ 2 50	7	25
33	*Gold Pen and Pencil, Elegant (do. do.)*	$ 5 50	13	55
34	*Knives and Forks (Patterson Bros.)*..	$14 75	22	147
35	*Knives and Forks (do. do.)*...	$18 50	28	185
36	*Carver and Fork (do. do.)*...	$ 3 75	9	37
37	*Pocket Knife (Meriden Cutlery Co.)*..	$ 1 50	4	....
38	*Pocket Knife (do. do.)*..	$ 2 00	5	20
39	*Pocket Knife (do. do.)*..	$ 2 75	7	27
40	*Ladies' Pocket Knife (do. do.)*..	$ 2 00	5	20
41	*Multum in Parvo Knife (do. do.)*..	$ 3 50	8	35
42	*Crandall's "John Gilpin"*........	$ 1 00	3	....
43	*Crandall's "District School"*.........	$ 1 00	3	....
44	*Crandall's Masquerade Blocks*........	$ 75	3	....
45	*Crandall's "Acrobats"*	$ 1 00	3	....
46	*Crandall's Building Blocks*...........	$ 1 50	4	....
47	*Crandall's "Menagerie"*	$ 2 00	5	20
48	*Pair of Skates (Patterson Bros.)*......	$ 3 50	8	35
49	*Boudoir Clock (S. B. Jerome & Co.)*...	$ 3 50	8	35
50	*Wire Bed Mattress (H. Buckingham)*..	$12 00	19	120
51	*Houchin's Improved Patent Pocket Cook Stove*..................	$ 1 35	4	...
52	*Household Press, (W. A. Boardman)*..	$2 00	5	20
53	*Aquapult, (Force Pump), (W. & B. Douglas, Middletown, Conn.)*..	$ 9 00	17	90
54	*Self-adjusting Gold-plate Watch Key, (J. S. Birch.)*.....................	$ 1 00	3	....
55	*Pocket Tool Holder (Miller's Falls Co.)*	$ 1 00	3	....
56	*Piano, Splendid 7-oct. (Steinway & So's)*	$650 00	625	....
57	*W. S. Blunt's "Universal Force Pump"*	$12 00	19	120
58	*Silver Watch (American Watch Co.)*..	$30 00	44	....
59	*Bracket Saw (Millers' Falls Man'f Co.)*	$ 1 25	4	....
60	*Pauson's Indelible Ink—Pen, etc.*......	75	3	....
61	*Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)*..........	$ 2 75	7	27
62	*Abbott Pocket Microscope (L. G. Abbott)*	$ 1 50	4	....
63	*Cahoon's Broadcast Seed-sower*........	$ 5 00	12	50
64	*Moore's Floral Set (Moore Man'f'g Co)*	$ 1 00	3	....
65	*Garden Seeds & Flower Bulbs (select'n)*	$ 2 00	5	20
66	*Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)*.....................	$12 00	19	120
67	*Breech-loading Pocket Rifle (Stevens).*	$16 00	24	160
68	*Double Barreled Breech-loading Gun (E. Remington & Sons)*.........	$50 00	66	....
69	*Shot Gun (E. Remington & Sons)*	$ 6 00	14	60
70	*Shot Gun, breech-loader, (do. do.)*....	$23 00	36	....
71	*Creedmoor Long Range Rifle No. 1 (do.)*	$100 00	110	....
72	*Creedmoor Long Range Rifle No. 2 (do)*	$85 00	100	....
73	*Creedmoor Long Range Rifle No. 3 (do)*	$60 00	76	....
74	*Hunting & Target Rifle (Remington)*..	$22 00	34	....
75	*Vest Pocket Pistol (Remington)*........	$ 3 75	9	37
76	*Revolver (Remington)*..................	$ 9 00	17	90
77	*Turn-table Apple Parer (Goodell Co.).*	$ 1 00	3	....
78	*Climax Apple Corer & Slicer (do.)*	$ 1 00	3	....
79	*Family Cherry Stoner (do.)*	$ 1 00	3	....
80	*Bay State Apple Parer & Slicer (do.)*	$ 1 50	4	....
81	*"Saratoga" Potato Peeler & Slicer (do.*	$ 1 00	3	....
82	*Sewing Machine (Remington)*..........	$50 00	66	....
83	*Family Scales (Fairbanks & Co.)*......	$14 00	21	140
84	*Clothes Wringer (Best—Universal)*....	$ 8 00	16	80
85	*Worcester's Great Illust'ed Dictionary*	$10 00	18	100
86	*Any back Volume Agriculturist* } *Unbound. Post-paid.*	$ 1 75	.....	20
87	*Any Two Back Volumes do.*	$ 3 50	.....	35
88	*Any Three do. do. do.*	$ 5 25	13	50
89	*Any Four do. do. do.*	$ 7 00	15	60
90	*Any Five do. do. do.*	$ 8 75	17	80
	—(Each ad'l Vol. at same rate.)			
91	*Twenty-one Vols. XVI to XXXVI.*	$36 75	53	...
92	*Any Back Vol. Agriculturist* } *Bound. Post-paid.*	$ 2 30	.....	25
93	*Any Two Back Volumes do.*	$ 4 60	.....	46
94	*Any Three do. do. do.*	$ 6 90	15	60
95	*Any Four do. do. do.*	$ 20	17	90
96	*Any Five do. do. do.*	$11 50	19	....
	—(Each ad'l volume at same rate)	......	.....	....
97	*Twenty-one Vols. XVI to XXXVI*	$48 30	66	....
98	*A* **$10** *Library (your choi'e.)* } *Sent prepaid by Mail or Ex's.*	$10 00	18	....
99	*A* **$15** *Library do.*	$15 00	24	....
100	*A* **$20** *Library do.*	$20 00	31	....
101	*A* **$25** *Library do.*	$25 00	38	....
102	*A Choice of Good Books.* (*See Description. p.* 408.)			

☞ *Every Premium article is* **new** *and of the very* **best** *manufacture. No charge is made for packing or boxing any article in our Premium List. The Premiums,* **Nos. 15, 18, 29 to 33, 37 to 41, 49, 51, 54, 55, 59 to 62, 65, 75, 76, 86 to 102,** *inclusive, will each be delivered* **FREE** *of all charges, by mail or express (at the Post-office or express office nearest the recipient) to any place in the United States or Territories.—The other articles cost the recipient only the freight after leaving the manufactory of each, by any conveyance desired. See* **Descriptions** *on the following seven pages,* 402 *to* 408 *inclusive.* **Illustrated List** *sent* **free** *to applicants.*

AMERICAN AGRICULTURIST.

ORANGE JUDD COMPANY, Publishers, 245 Broadway, N. Y.

ANNUAL SUBSCRIPTION **Terms** (always in advance): $1.60 each for single copies: Four copies, $1.30 each: Ten copies, $1.20 each: Twenty copies and upward, $1.10 each. These rates *include Postage*, in each case, which is pre-paid *by the Publishers.* Papers are addressed to each name.

TO

All Men, Women,

AND

Children,

EVERYWHERE.

The Publishers of the *American Agriculturist* have the pleasure of presenting to their friends and patrons a most valuable assortment of Very Good, Very Desirable, Very Useful Things, one or more of which can be had without money and without price, by one or more persons residing at or near each of the 41,000 Post-Offices in the United States, and by others residing in any other place in the civilized world.

N. B.—*Every article described in the following pages is new, first-class, and warranted to be just what it is described to be. Every article sent out will be new from the factory, of the latest and best manufacture.—No better can be obtained anywhere. Every article is put down at its regular cash price, and is just as valuable as so much cash, for use, for sale, or for a present to a friend.*

Read these Explanations.

There is no clap-trap, no gift enterprise, nothing deceptive in this arrangement. It is a straight-forward business, taken part in by over 18,000 persons in past years, with general satisfaction to themselves, and to the Publishers. Here is the explanation:

The *American Agriculturist* has been issued for Thirty-six Years; it has an immense circulation, and is a thorough-going, *useful* paper for all classes, in Country, City, and Village. It is beautifully illustrated with over 600 useful engravings every year.—There ought to be an Agent for it at every post-office in the world; but the Publishers, having tried the agency system, found it so difficult to follow it up in all its details, that they dropped it entirely, and pursue the following plan:

They allow and invite *any* reliable person, any where, to receive and forward subscribers, to show the paper to others, and ask them to subscribe, and thus do a favor to both the publishers, and to all those whose subscriptions they thus receive and forward. For all such assistance, the Publishers offer good remuneration in the form of valuable articles, which are presented free, the article and its value being proportioned to the number of Subscribers looked after and forwarded. In this way almost any one can easily secure and forward three, four, five, or more, names of subscribers, and receive the article offered, free.

N. B.—*The American Agriculturist is itself, alone, worth many times its cost to every subscriber, and no premiums or extras are intended to be offered* WITH *the paper. These Premium Articles are intended solely as remuneration for any time and attention given by those who show the paper, speak of its merits and usefulness, and receive and forward names.*

N. B.—Every dollar paid by subscribers is expended upon the paper, and is returned to them in the paper itself. The premiums are paid for with the money received for good advertisements—only good ones are admitted into the paper.

N. B.—These premium articles are bought at the lowest wholesale rates for cash. So, while they are *just as valuable as so much money*, the Publishers are able to give much larger remuneration than if they pursued the old system of cash commissions.

Look over the articles and descriptions in the following 7 pages; select the article most wanted; take a copy of the paper and show it to friends and neighbors, and very soon a list will be obtained which will secure the article desired. If a large article is aimed for, but not secured, a smaller one can be taken.

> *If the Reader only knew the good quality and real value of these premium articles, and how easy a matter it is to show the American Agriculturist to some friends and neighbors, tell them its value, and ask them to try it a year, and thus gather a few subscribers, and himself receive the premium offered, he* **would take hold of it at once.** *What over* **18,000** *others have done, any one else can easily do.*
>
> ⁂ There are from 30 to 500 families, or more, in the vicinity of each Post Office, every one of whom would be benefited by having this Journal for a year, at a cost, postage included, of 3 cents a week. From one to a dozen premium clubs, small or large, may be gathered in the vicinity of each Post Office, and as many premiums be obtained. YOU may get one or more of them.

Begin to-day.—To hasten forward the subscriptions for 1878, so that the names can be all properly entered and recorded in advance of the usual rush in December and January, the Publishers offer *from this time forward* to receive subscriptions for 1878, and begin sending the papers from the receipt of the subscription for the rest of 1877, without extra charge. This will be an extra inducement to new subscribers this month, and will thus help those collecting premium clubs. Multitudes can secure a large premium list *this month.*

A Good Business.—While most persons only give odd hours and rainy days to gathering names, and receive the premiums themselves, a large number have made it a *regular business* for several months in each year. They collect and forward the names, receive the Premiums *free,* sell them (for they are all good, and *readily salable,*) and thus realize a good income—two, three, four, and five hundred dollars, or more. In one case a *Lady* has received thus over **$3,000** a year. She has been unusually successful, but there is no reason why *many others may not do similarly,* at least on a smaller scale.

Explanatory Notes.
N. B.

Read and carefully Note the following Items: The Table, on page 401, tells the *name* and *cash price* of each article, and (in last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each, but only a part of the premiums come under this head. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.)....(*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. You can have any time you wish, up to next July, to complete your list, but every premium desired will be sent as soon as earned and ordered....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion at least should be *new* names; it is partly to get these that we offer premiums to canvassers....(*f*) One or two Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they are expensive, and should be used carefully and economically, and where they will *tell.* Other specimen numbers will be sent, post-paid, *to canvassers only*, for 10 cents each. The price to others is 15 cents....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk; otherwise it is not.

☞ Premium Articles for Sale.

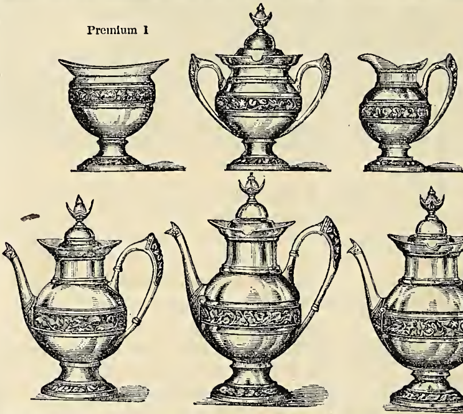
It sometimes happens that persons, who have not time to secure these valuable and useful articles by raising clubs of subscribers, are desirous of purchasing one or more of them, and wish us to procure or select them. For the accommodation of such, *we will supply and send most of these premiums for cash*, at the prices in the following Descriptive List, and prepaid or otherwise, as stated.

☞ This entire paper, including these Premium pages, is Copyrighted.

Silver-Plated Ware.—Important.

Dissolve Cyanide of Silver in water. Take a piece of lead, pewter, or almost any other metal, and after preparing its surface, fasten it to the negative wire of an Electric Battery, and dip it into the dissolved Cyanide of Silver. In a minute or two the whole surface will be completely covered with a coat of *pure silver.* Nothing but silver can be seen, though the coating may not be the thousandth part in thickness of the thinnest tissue paper. Every minute the metal remains in the solution, more silver is deposited, and the process can go on until half an inch or more of pure silver is deposited, though to the unpractised observer no more silver will *show* than at the end of the first few minutes. Taking advantage of this, unscrupulous persons coat baser metals with the thin silver film, and sell them at an enormous profit. The purchaser finds, after a little time, that the silver is gone. Thickly coated ware will last many years, and be just as serviceable as if the whole were *pure solid silver*, and look just as well, while costing far less. If the thick silver coating be put on a white metal, even if a corner or other spot gets worn off, the coated metal will not show. After long use, plated ware can be re-plated as good as new, at moderate expense. We have articles constantly used eight and ten years, and still showing nothing but silver. In buying silver-plated ware, *everything depends upon the honesty of the manufacturer*, and the judgment of the buyer or seller.—We have taken great care, in selecting articles to offer to our readers, to get not only those of *superior style*, but those which we can warrant to be *heavily plated*, and exactly *as represented.* Such articles as these are the first fourteen (1–14) Premiums described below. Our readers who get any of these, as Premiums, or by purchase, may rely upon having first-rate articles, and as cheaply as they can be *honestly* made. They can find plenty of similar articles, at less than half the prices named, and that will look as well for a few weeks, or months, if not used, but they will be *very dear.*—**N. B.** The first Eleven Premiums are made for us by the Middletown Plate Company, at Middletown, Conn. Mr. Judd is well acquainted with this Company and its Officers, and visits the extensive works very frequently, observing the process of manufacture, and he confidently recommends their work as being just what it professes to be—and every way reliable. A similar recommendation can be given for the Premiums 12, 13, and 14, from the Meriden Cutlery Company, whose work is first-rate.

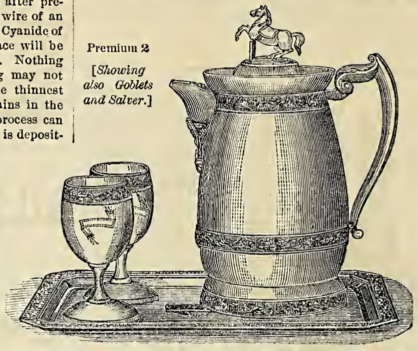
Premium 1



No. 1.—Tea Set.—This is a **Splendid Set** of six pieces, full size, viz.: a *Coffee Pot*, a *Tea Pot*, a *Water-Pot*, a *Sugar Bowl*, a *Cream Cup*, and a *Slop Bowl*—tasteful enough for the most stylish mansion—all beautiful, of uniform design, late pattern, with *raised* and *embossed figure work.* They are none of the common cheap silver-washed stuff that will look finely so long as unused, but are the *best triple-plate* on *white metal.* (See notes on plated ware, just above.) For all practical purposes, and for ornament, they will be as good as solid silver, for years. This No. **1**, (and the others also), afford to a multitude of persons a rare opportunity to get *beautiful* and *useful* articles for home use and for wedding and other gifts. It will be comparatively easy to collect names of subscribers enough to secure one or more of these articles. In a few evenings a gentleman could easily get the 66 subscribers only, at $1.60 each, and secure the above splendid Tea Set *free*, for his wife or a friend. Many a young man can thus get one for a mother, a sister, or *friend.* Any lady can get a Set for herself in a brief time. [We will forward one of these elegant sets on receipt of $50.] Receiver to pay expressage.

Premium 2

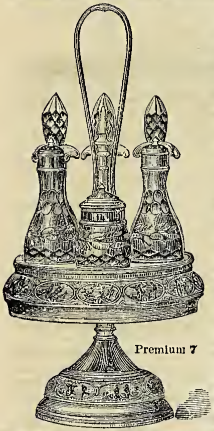
[*Showing also Goblets and Salver.*]



No. 2.—Ice (or water) Pitcher.—A large, highly Ornamental Article, that will adorn the table, as well as serve a very *useful* purpose, and last many years, with no danger of breakage. It is same make, same metal, plating, etc., as No. **1.** Send us only 20 subscribers, at $1.60 each, and you will have this splendid Pitcher.—For 26 subscribers, at $1.60 each, we will give the **Pitcher** and a *round* **Salver,** of pattern to correspond, (value $17.50). — For 42 subscribers we will send the **Pitcher** and a large 14-inch **Oblong Salver** (value $28.00), which is large enough to hold the Pitcher and two goblets. — For 49 subscribers, we will send the **Pitcher,** the **Oblong Salver,** and a *pair* of beautiful **Goblets,** silver without, and *gold-plated* inside, (value $34.75.) This *Complete Set* is exceedingly desirable, though the Pitcher alone, or that with the Round Tray, or the large Oblong Salver, will answer well for *use* and for *ornament.*—[We will sell the Pitcher, and any one or all the articles above mentioned, at the prices given with each.] Receiver to pay expressage.

Premium 4

Nos. 3, 4.—Cake Baskets.—Two styles are offered, both of *elegant* patterns, very taking, *useful*, and *beautiful* table ornaments—just the thing every one wants. From same makers and same metal as No. 1. No. 3 presented to any one sending only 16 subscribers, and No. 4 to any one sending 18 subscribers, at $1.60 each.—[Or we will sell No. 3 for $7.50, or No. 4 for $10.] Receiver to pay expressage.


Premium 7

Nos. 5, 6. 7.—Casters.—These are all of *handsome* patterns, richly chased, the first containing four cut glass casters and mustard bottle, and the two others five casters and a mustard bottle—useful, necessary, ornamental for every dining table. Same makers, and same metal and plating, as No. 1. Send us only 13 subscribers, at $1.60 each, and get No. 5, or 16 and get No. 6, or 19 and get No. 7 *free*.—[Or we will sell No. 5 for $5.25. No. 6 for $7.50, or No. 7 for $10.50.] Receiver to pay expressage.

No. 8.—Butter Cooler.—This is a really good and useful article, as well as an ornamental one. The pattern is very taking, having been selected from a large assortment. A very little ice in the holder under the plate will keep butter cool and fresh for a long time on the table, even in the hottest weather. The bright surface reflects off outside warmth, thus keeping the butter cool. Same metal, from same House as No. 1. This fine premium is *presented* to any one who simply collects and forwards us 15 subscribers, at $1.60 each, easily done.—[Or we will send one to order on receipt of $6.50.] Receiver to pay expressage.

Premium 8

Prem. 9

No. 9.—Pickle Jar and Fork.—The jar is of glass, handsomely mounted in silver-plate frame, with fork attached. It is a very ornamental article for the table, as well as useful, and would prove an acceptable present to a young housekeeper. 12 subscriptions at $1.60 each will secure it *free*. [Or we will forward one on receipt of $5.] Receiver to pay expressage.

No. 10.—Syrup Cup with Plate.—Every well set table needs at times a syrup cup, This elegant cup stands on a fine plate of suitable design. Only 15 subscribers at $1.60 each, are needed to secure it *free*. [Or, when desired, we will send one on receipt of the price, $6.25.] Receiver to pay expressage.

Premium 10

Premium 11

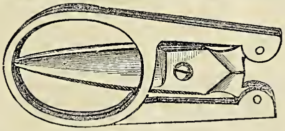
No. 11.—Child's Cup.—(*See Engraving*).—A beautiful gift for the *Little One*. Triple-plated on the outside, and *gilded* on the inside. It never breaks, and will last for many years—indeed, be a *life-keepsake*. *Obtain only* 8 *subscribers*, at $1.60 each, and you can secure one of these beautiful cups for your own child, or a name-sake, or other favorite.—[Or we will forward one on receipt of price, $3.50.] Receiver to pay expressage.

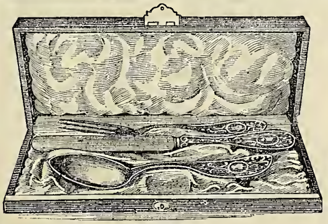
No. 12.—One Dozen Tea-Spoons.—No. 13.—One Dozen Table-Spoons.—These are all of the elegant *Crown pattern*, fine metal, **triple plated,** and for beauty of design, and excellence of workmanship, will be found unsurpassed by solid silver. These spoons are far *cheaper* than many others we have found at half the price, and *are well worth canvassing for*. Supplied by the Meriden Cutlery Co., No. 49 Chambers St., New York City. Sixteen subscribers sent us at $1.60 each will secure **12** Tea-Spoons *free*; twenty-two subscribers will secure **12** Table Spoons *free*.—[We will sell the Tea Spoons for $7.25 per dozen, and the Table Spoons for $14.50, or a set of six for half these prices.] Receiver to pay expressage. ☞ We will send a set of six Tea-spoons for 9 subscribers, or a set of six Table-spoons for 16 subscribers, at $1.60 each.

No. 14.—One Dozen Table-Forks.—*The same description and remarks apply to these as to No.* **12,** and they are from the same makers. (We select as Premiums only such articles as we can warrant in quality and price, and such as are serviceable.) Presented *free* to any one sending only 22 subscribers at $1.60 each, or a set of six for 16 subscribers.—[We will sell one dozen for $14.50, or a set of six for $7.25.] Receiver to pay expressage.

Style of Prem. **12, 13, 14**

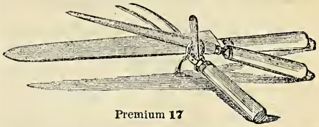
No. 15.—Ladies Folding Pocket Scissors.—The cut represents them folded up. Unfolded they appear like common scissors. Very safe for carrying in the pocket. A style for gentlemen, with blunt ends, can also be supplied at same rate when desired. Each one comes in a neat morocco case. Supplied by the Meriden Cutlery Co., 49 Chambers St., New York. Four subscriptions at $1.60 each will secure a pair *free*, post paid. [Or we will send a pair for $1.50.]


Premium **15**

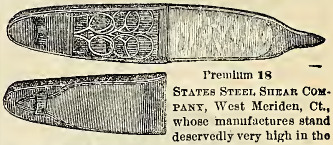

Premium **16**

No. 16.—Child's Set, Knife, Fork, and Spoon.—The set is Standard Silver Plate, white metal base, medallion pattern, in satin-lined morocco case; *an elegant present*. Supplied by the Meriden Cutlery Co. Eight subscriptions at $1.60 each will secure it *free*. [Or we will send a set on receipt of the regular price, $3.00.] Receiver to pay express charges.

No. 17.—French Cook's Knife, Fork, and Steel.—This is a long (10 in.) thin Knife, with Celluloid or Patent Ivory Handle, warranted not to crack in hot water, made of the best steel, and for use rather than ornament; and it is really pleasing to see how easily it slips through a joint of beef. The fork and steel are made to match, and the fork is supplied with the very convenient patent rest. It would save many wry faces, and perhaps hard words, were it in general use. Supplied by the Meriden Cutlery Co., 49 Chambers St., New York. Only nine subscribers to the *American Agriculturist* at $1.60 each, will secure the whole *free*. [We will send the set for $3.75.] Receiver to pay expressage.


Premium **17**

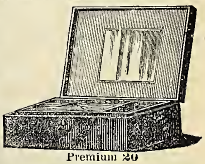
No. 18.—Case of Scissors.—The case is of morocco, handsomely gotten up, and lined with velvet and satin, containing *three first quality scissors*, crocus finish, length 4, 5, and 5½ inches, respectively; a very pretty and useful Premium. Made by the United States Steel Shear Company, West Meriden, Ct., whose manufactures stand deservedly very high in the market. Furnished to us by the Meriden Cutlery Co., 49 Chambers street, New York. Ladies can get this premium *free*, forwarded post-paid by mail, by sending a club of only ten subscribers, at $1.60 each.—[Or we will send this set, pre-paid, on receipt of the price, $4.00.]


Premium **18**

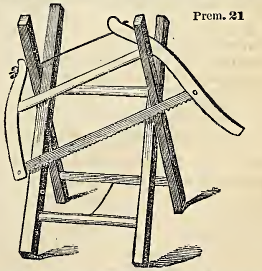
No. 19.—Portable Writing Desk.—Always handy, especially for the young folks. It is a 13-inch square black walnut desk, with gilt ornaments. From C. W. F. Dare, 47 Cortlandt St., New York City. Four subscribers at $1.60 each will secure this *free*. [We will send one for $1.75 cash]. Receiver to pay expressage.

Premium **19**

No. 20.—Walnut Work Box.—A pleasing gift for a young Miss. It is a 12-inch solid walnut Box, cushion, etc., inside velvet finish. From same manufacturer as No. 19. Four subscriptions at $1.60 each will secure it *free*, [or it will be sent on receipt of the price, $1.25.] Receiver to pay expressage.


Premium **20**

No. 21.—Buck and Saw for Boys.

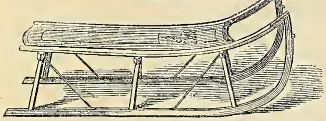

Prem. **21**

—Suitable for the little fellows from 4 to 8 years old, and it will please them. From same manufacturers as No.

19. Two subscriptions at $1.60 each will secure it *free.* [It will be sent for 50 cts.] Receiver to pay expressage.

No. 22.—Little Girl's Wash Set.—Composed of six pieces, viz.: washboard, wringer, pail, clothes-horse, scrub-brush, and brass-bound tub 10 inches in diameter. From same manufacturer as No. 19. Three subscribers at $1.60 each will secure it *free.* [It will be sent for $1.00 cash.] Receiver to pay expressage.

Premium 23

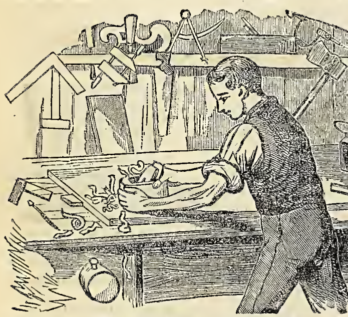


No. 23.—Sled.—Made of oak, ornamented, and varnished on wood, well braced, with polished runners. From C. W. F. DARE, 47 Cortlandt St., New York City. Five subscribers at $1.60 each will secure it *free.* [It will be sent for $2.00 cash.] Receiver to pay expressage.

No. 24.—Spring Horse.—A handsome present; 8-inch block, full shape and trim, ornamented leather saddle. A Horse for the boys! From same manufacturer as No. 19. Only eighteen subscribers at $1.60 each will secure it *free.* [It will be sent for $11.00 cash, and is worth the money.] Receiver to pay expressage.

No. 25.—Boy's Wagon.—Just the thing for the active little "drivers" at home. This Wagon has iron axle, and heavy round tire wheels, painted and ornamented with bright colors, has hub caps and seat, with 28-inch body. From C. W. F. DARE, 47 Cortlandt St., New York. A father, mother, or older brother or sister ought to easily collect the 12 subscribers which will get this *free.*—[We will supply one for $5.00.] Receiver to pay expressage.

Premium 25



No. 26.—Boy's Tool Chest.—Every Boy in the United States or elsewhere ought to have this; or better, No. 27; or better still, No. 28. *Twelve* assorted tools, in a neat hinged-lid box, made of ash, with black walnut molding. Just the thing to encourage the mechanical genius in boys. Made by E. I. HORSMAN, 80 and 82 William St., New York City. Three subscribers at $1.60 each will secure one *free.* [It will be sent for $1.00 cash.] Receiver to pay expressage.

No. 27.—Boy's Tool Chest.—Larger than No. 26, and containing *twenty-one* tools. From same manufacturer. Only seven subscribers at $1.60 each will secure one *free.* [Or one will be forwarded on receipt of $2.50 cash.] Receiver to pay expressage.

No. 28.—Boy's Tool Chest.—Still larger than No. 27, and from same maker. Chest contains *thirty-two* tools, and will be a fine present for any boy. Twelve subscribers at $1.60 each will secure it *free.* [It will be sent for $5.00 cash.] Recipient to pay expressage.

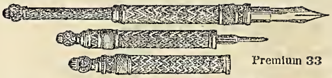
Premium 29

No. 29.—Patent Magic Bell Head Pencil.—This is a very pretty and convenient gold-plated Pocket Pencil, which is extended or closed by pulling or pressing the head. This premium and the four which follow, are from the well known manufacturers, LUDDEN & TAYLOR, 192 Broadway, corner of John St., New York. Mr. Ludden has been engaged in the business 37 years, and we can highly recommend his work. Only four subscribers sent us at $1.60 a year secures one *free,* post-paid.—[We will send one, post-paid, for $1.50.]

Nos. 30, 31.—Magic Charm Pencils.—These are gold-plated and very beautiful. We offer two kinds, the smaller, an exceedingly tasteful thing, for ladies, and a larger style for gentlemen. Each style has a ring at the head for attaching to a watch-chain. By same makers as No. 29. 5 to 7 subscribers will secure one *free.* (See Table.)—[We will send the ladies' size, post-paid, for $2, and the gentlemen's size for $2.75.]

Closed. Premium 31

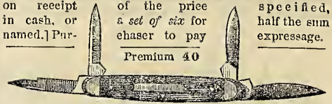
No. 32.—Gold Pen, Telescopic Case.—Gold-plated case containing No. 4 Diamond-pointed Gold Pen, warranted. Same maker as No. 29. Only 7 subscribers sent to us at $1.60 each, will secure this splendid article *free* and post-paid. In sending for this pen indicate how you wish the pen—whether you desire it to be stiff, medium, or limber.—[We will send one of these fine Pens, post-paid, on receipt of $2.50.]



Premium 33

No. 33.—Gold Pen and Pencil.—This is a very elegant premium. The handsome, heaviest gold-plated case contains a No. 7 Improved Telescopic Pen and Pencil. The pen *slides* out, the pencil is turned out by a *screw*, and there is a chamber for leads in top. By same makers as No. 29. This is richly worth the little effort to collect 13 subscribers at $1.60 each to secure it *free.*—[We will send one, post-paid, for $5.50.]

Nos. 34, 35, 36.—American Table Cutlery.—*Useful, very desirable, well tempered,* and *wanted* by *everybody!* We are glad to be able to offer really *good* articles of *American* manufacture, such as are competing *successfully* with the best foreign make. Messrs. PATTERSON BROS., 27 Park Row, who supply us with these articles, are also importers of English goods. They recommend these Knives, manufactured by the MERIDEN CUTLERY Co., as equal to any Cutlery in the market, and their recommendation is a guarantee wherever they are known. We offer two kinds of Knives, and *three* sizes of *each* kind. No. **34** have Rubber Handles, which are actually boiling-water proof, so that, if they were accidentally to remain in it for several minutes, or even hours, they would not be injured. The Blades are of the *best steel*, and *warranted.* Premium **34** is the Desert or Tea size, sold at $14.75 per *dozen*....We present of these *twelve* knives and *twelve* forks to any one sending only 22 subscribers at $1.60 each... For 23 subscribers, at $1.60, or 75 at $1.10, we will give either the medium size, or the large Dinner size, sold at $15.70.—Premium **35** have *Ivory* Handles, are selected with great care, have Steel Blades, and are beautiful goods; they are the Tea or Dessert size, which, with forks, sell at $18.50. Only 28 subscribers at $1.60 each secures these... For 33 subscribers at $1.60, or 110 at $1.10, we will send the medium size, or the Dinner size, sold at $21.20....For 35 names, at $1.60, or 116 at $1.10, we will send the larger Dinner size, sold at $22.50. The Forks, which accompany these Premiums, (Nos. **34** and **35**,) are made of genuine Albata, and warranted *double-plated with coin-silver.* These Forks are furnished to us by Messrs. PATTERSON BROS.....Premium **36**, the Carving-Knife and Fork (given for 9 subscribers), are made by the MERIDEN CUTLERY Co., with best *Ivory*, balanced Handles. They are beautiful, and serviceable articles for daily use. These premiums are very useful and desirable, and have been secured by many persons in past seasons. —[We will send any of the above named articles, on receipt of the price specified, in cash, or a *set of six* for half the sum named.] Purchaser to pay expressage.

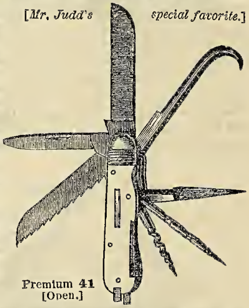


Premium 40

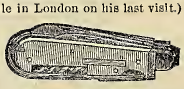
Nos. 37, 38, 39, 40.—Pocket Knives.—HERE'S FOR THE **Boys** AND **Girls!**—These Premiums are among the most pleasing and useful that we have ever offered. Every boy, and girl too, wants a pocket knife. We give them an opportunity to obtain a most valuable one, for merely a little effort. Any boy or girl can easily collect 4 to 7 subscribers, and receive one of these fine premiums *free,* (see table, page 401). These knives are furnished by MERIDEN CUTLERY Co., 49 Chambers St, New York, whose work is *equal to any done in this country or Europe.* No. **37** is a neat, substantial Knife, with *three* blades and buck-horn handle. No. **38** is a still finer article, with *four* blades and *pearl* handle. No. **39** is an elegant Knife, with *five* blades and *shell* handle. No. **40** (*see Engraving*) is a Lady's beautiful Pocket Knife, with *four* blades and *shell* handle.—[Any of these knives will be sent by us, post-paid, on receipt of the price, in cash, as given with each in Table, p. 401.]

No. 41.—Multum in Parvo Pocket Knife.—☞ Boys, Read this.☜ Yes, and the *Men*, too. Mr. JUDD thinks more of this than any other article of twice its cost. He obtained one in London just *ten years* ago, which *he still carries,* and says it far more than pays the interest on $100, (2 cents a day,) for, aside from its ordinary use as a double-bladed knife, some one of its "tools" is often worth a "quarter," by being on hand and just the thing wanted in an emergency. He sent an order to England at three different times, but only received much larger, clumsier articles, less effective, and costing $5 each, and finally learned that the original maker was dead. He then got some English cutlers here to make them, but they did not always succeed in keeping up a supply of first-class articles. We now get them *all right* of the MERIDEN CUTLERY COMPANY, and much cheaper than any imported. (Mr. JUDD could find none as desirable while in London on his last visit.) The Engraving shows the parts of the knife, except the very convenient and very effective *Screw-driver* hidden by the opened large blade. The *Saw* is double-toothed, and will cut an inch board, saw off a good-sized stick, cut a notch, etc. The *Hook* is used to lift a stove-cover, pry open sundry things, clean a horse's hoof, pull on the boots, etc. The *Punch* makes holes in harness, wood, etc., which can be enlarged by its sharp corners. The *Gimlet* and *Corkscrew* are convenient, of course. The *Tweezers* and long *Pointer*, or *Brad-awl*, drawn from the end of the handle, often come into use. The back of the Hook makes a good *Hammer* for tacks, and small pounding. The inside of the Hook forms a small *Nut-cracker*. All close into a compact white handle, the whole weighing only 2 ounces. IT IS A POCKET-FUL OF TOOLS. Eight subscribers at $1.60 each brings it *free,* post-paid.—[We will send one, post-paid, for $3.50.]

[*Mr. Judd's special favorite.*]



Premium 41 [Open.]



Premium 41 [Closed.]

No. 42.—Crandall's John Gilpin.—Full of Fun for the Whole Family.—This is one of Mr. C. M. Crandall's very popular inventions. John Gilpin, with his hat on, is about 10 inches high, brilliantly dressed, and all ready to be put into the hundred laughter-provoking positions in which, with his horse, the delighted boy who gets hold of them will be ready to place them. Get John Gilpin. Only three subscribers at $1.60 each, will secure a box *free.* Delivery unpaid.—[Or, a box will be sent, prepaid, for $1.35.]

No. 43. — Crandall's District School.—This very amusing group of teacher and scholars in the "district school," will delight every Child, and Man and Woman too. The grave "Master," seated by the desk, with his "whisking stick"; the boys and girls with their books; the "Little Lamb" that has followed Mary to school; the "Dunce" and his cap, and the altogether comical appearance of the whole company, make this one of the most attractive toys of Crandall's invention.—Three subscribers at $1.60 each, will secure a box, delivery unpaid. [We send one, post-paid, for $1.25.]

Premium 43.

No. 44.—Crandall's Masquerade Blocks.—These are put up in boxes; the blocks in each box will make, by various combinations, **300** *different pictures* in brilliant colors. They are not injured by washing, and afford endless amusement for children. They are very beautiful gifts for the little ones, and all should have them. Only 3 subscribers sent us at $1.60 each, will bring you a *free* box. Delivery unpaid.—[Or a set will be sent, pre-paid, on receipt of 95 cents.]

No. 45.—Crandall's Acrobats.—A most attractive, amusing and wonderful Toy. Children everywhere, who have seen the Acrobats, are delighted with them. *Thousands of figures can be made from the pieces in a single box.* The pieces are variously colored, and there is no end of fun in a box of them. If you take *your* premiums in other articles, don't fail to *buy* the children a box of these Acrobats. Only 3 subscribers, at $1.60 each, will bring a *free* box. Delivery unpaid.—[One will be sent, post-paid, for $1.25.]

No. 46. — Crandall's Improved Building Blocks furnish a most attractive amusement for children. Churches, Dwellings, Barns, Mills, Fences, Furniture, etc., in almost endless variety, can be built with them, and *the structures remain so firm as to be carried about.* For developing the ingenuity and taste of children *they are unequaled.* The Blocks are put up in neat boxes accompanied by a large *Illustrated Sheet* giving various designs of buildings, etc. This is one of the most successful toys ever invented. Hundreds of thousands are in use. Four subscribers, at $1.60 each, will secure you a *free* $1.50 box. Delivery unpaid.—[Or we will send a box, pre-paid, for $2.00.]

No. 47.—Crandall's Menagerie—Most Marvellous and Interesting.—The six animals comprising the Menagerie are beautifully painted, and so arranged with 56 pieces in each box, that tens of thousands of most laughter-provoking figures can be made up with them. Besides this, all the pieces of Crandall's Acrobats fit the pieces of the Menagerie so that any one who has both, can combine them, and thus have no end of fun. Send us only five subscribers, at $1.60 each, and you will have it *free.* Delivery unpaid. Postage costs 60 cts.—[A box will be sent, pre-paid, for $2.60.]

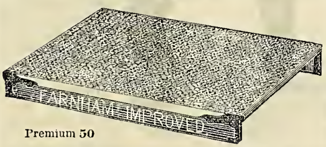
No. 48.—Pair of Skates.—The style we offer is "Barney & Berry's *Club Skate*" one of the most thoroughly tried and approved, wholly of steel, blued tops, polished runners. Size from 7 to 12 inches. Always give size of shoe when desiring this premium. From Messrs. Patterson Bros., No. 27 Park Row, N. Y. Any boy or young man can get thus a pair of *first-class* skates *free*, by simply collecting and sending to us only 8 subscribers, at $1.60 each, and naming the size desired. [We will sell a pair for $3.50.] Receiver to pay expressage.

Premium 48

No. 49.—Boudoir Clock.—A very pretty and *useful* article. It is 5 inches in diameter, in an octagon Wood Case, covered with fine Morocco, and ornamented in gold, and withal a good time-keeper. It will run in any position, is suitable for the home, store, office, or for a traveler. Only 8 subscribers, at $1.60 each, needed to obtain it *free*, post-paid. Manufactured by Messrs. S. B. Jerome & Co., New Haven, Ct. [We will send this clock, post-paid, on receipt of $3.50.]

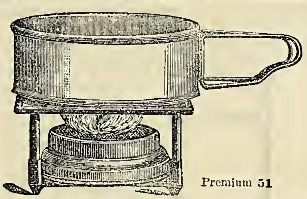
Premium 49

No. 50.—First-rate Wire Bed Mattress.—*Just the thing for Every Family.*—This is something we would like to see on the bed of every hard-working man and woman in the country, and it is "good enough for a king." A smooth surface of woven fine wire, so "kinked and linked" that it is thoroughly elastic, yielding gently to pressure like a rubber sheet, or feathers, or a water surface, yet durable, and without the perspiration retaining surface of rubber or feathers. We have used one three years, and recently obtained a new one, which so pleases us that we have secured it at the last moment for our premium list, thus enabling many families to secure one, *free*, by the simple effort required to collect only 19 subscribers at $1.60 each. It is called the "Farnham Improved Woven Wire-Bed, and is manufactured by Hiram Buckingham, Chester, Conn. The only covering it needs is blankets, or mattress—enough to give warmth to the body underneath, according to the season. They are made in sizes to fit into any ordinary bedsteads. They are lasting, and require no tightening-up arrangement. They can go anywhere as freight. (Give us *size* wanted.) The price is reduced to $12.00. [On receipt of this price, we will forward one to any address; or we will send one *free* for a premium, as above.] Freight to be paid by the receiver.



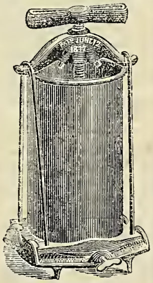
Premium 50

No. 51.—Houchin's Improved Patent Pocket Cook Stove.—With Gridiron and Boiler (with folding handles) holding nearly one quart, which can be used as a drinking cup. The cut represents the Stove in operation, with the boiler placed upon it, which will boil water in five minutes to make 2 or 3 cups of Tea, Coffee, or Chocolate, Boil Eggs, Stew Oysters, etc. Pour about two tablespoonsful of alcohol through the wire gauze, and light with a match or taper. The Lamp being filled with an indestructible packing will not spill or explode. Send four subscribers, at $1.60 each, and get it *free*, post-paid. These stoves are made by the Houchin Manufacturing Co., 150 East 169th St., New York.—[We will send one, pre-paid, for $1.35.]



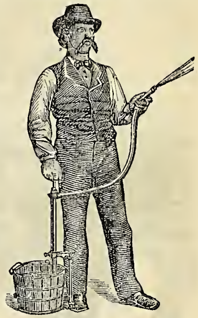
Premium 51

No. 52.—Household Press.—This is one of the most convenient little inventions for the housekeeper that we have seen. It is designed for pressing corned beef, spiced meats, boned turkey and chicken. By an easy change of the bottom, the press can be used in making jellies, cider, or pressing out lard, tallow, herbs, or beef for tea for invalids, and in many other ways. Supplied by W. A. Boardman, 128 Union St., New Haven, Conn. We will send one *free* for 5 subscribers at $1.60 each, [or on receipt of the price, $2.00.] Expressage to be paid by Receiver.



Preminm 52

No. 53.—The Aquapult—A Combined Hand Fire-Engine, Portable Brass Force Pump, Sprinkler, etc., etc.—Manufactured by W. & B. Douglass, Middletown, Conn.—This is a new, simple, cheap, effective apparatus, very valuable for throwing water or other liquids for watering gardens, vines, plants, and flowers; for washing windows, carriages, etc.; for carrying promptly to any point to put out beginning fires; for pumping water out of boats, cellars, etc., etc. It will pump 5 gallons a minute, and it throws a stream readily against the second story windows, or even on to the roof of a two-story house. The *stirrup*, adjustable by a screw at any point according to the depth of vessel, holds the pump firmly by means of the foot, leaving one hand free to work the handle and the other to direct the rubber hose-pipe. It is simple in construction, is made of brass, packs into a small space, and weighs but 5 pounds. Price, complete, with three feet of rubber hose, discharge pipe, and two nozzles, for single stream and for spray or sprinkler, $9.00. Seventeen subscribers at $1.60 each, will secure the whole *free*, [or we will supply it on receipt of $9.] Receiver to pay carriage or expressage in either case.



Premium 53.

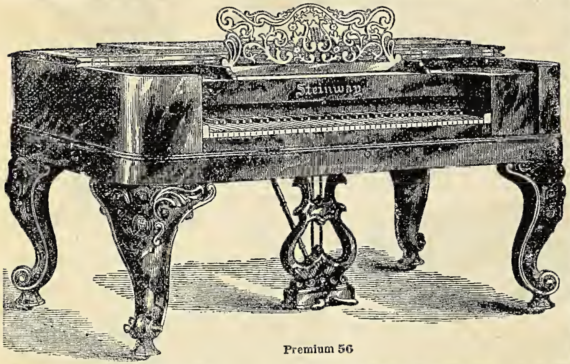
No. 54. — Self-adjusting, gold plate, Watch Key. This Key is universally acknowledged by Practical Watchmakers to be the best ever offered to the trade. Several times, while on a summer trip in the country, we were able to accommodate friends, who had lost or mislaid their own watch keys, with one that would *fit any watch*, and it was one of these neat little things of Birch's invention. Each Key is thoroughly tested before being sold, and the whole are manufactured under the immediate supervision of the Patentee. Three subscribers, at $1.60 each, will secure the neat gold plate Key offered as Premium. For *four* subscribers, we will send the more expensive style, celluloid, with gold-plated tips, retailed at $1.50, post-paid. Made by J. S. Birch, 38 Dey St., N. Y.—[We will send one, post-paid, for $1.00, or the finer style for $1.50.]

Prem. 54

No. 55. — Pocket Tool Holder.—(*See Engraving.*)—Every boy (or man) will be glad to get hold of this Premium. We have kept a similar, but less perfect set in use many years, and found it very convenient for a thousand little jobs. In a maple handle, which is hollow, with a lignum-vitæ head, are packed *twenty* small *cast-steel* tools, any one of which may be quickly adjusted to the handle. It will also hold for using, anything from an 8-inch mill-file to a cambric needle. Only 3 subscribers, at $1.60 each, sent to us will secure you a *free* set, post-paid. These are made for us by the Miller's Falls Manufacturing Co., 74 Chambers St., N. Y.—[We will send one of these, pre-paid, for $1.]

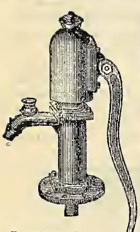
Premium 55

No. 56.—Steinway Piano.—A Superb Gift.—SEVEN OCTAVE ROSEWOOD CASE; LARGE FRONT ROUND CORNERS; BEVELED TOP; OGEE MOULDING; RICH CARVED LEGS AND LYRE; OVERSTRUNG PATENT DUPLEX SCALE; PATENT IRON CUPOLA AND PIER FRAME; PATENT AGRAFFE ARRANGEMENT THROUGHOUT THE ENTIRE SCALE, SAME AS IN GRAND PIANO.—This is one of the most elegant Premiums ever offered; regular and only price **$650.** That this Magnificent Instrument comes from the celebrated establishment of Messrs. Steinway & Sons, Nos. 109 & 111 East 14th St., N. Y., is enough to say; but it is due to these enterprising manufacturers to state that while their pianos have repeatedly received the First Premiums, by the award of the most competent judges the world can produce; at the Universal Exposition in Paris, they received the First Grand Gold Medal, and at the Centennial Exhibition in Philadelphia, 1876, they were awarded the Highest Honors, viz.: TWO MEDALS OF HONOR AND TWO DIPLOMAS OF MERIT—no other Piano exhibitor having received a similar distinction. Official report on Steinway's exhibit in the Main Building: "For greatest concert capacity in Grand Pianos, as also highest degree of excellence in all their styles of Pianos, viz—largest volume, purity and duration of tone, and extraordinary carrying capacity with precision, and durability of mechanism; also, novel disposition of the strings and construction, and bracing of the metal frame." The report then minutely describes and emphatically endorses the six principal patented improvements which have made the Steinway THE STANDARD PIANOS OF THE WORLD. The world renowned Artists and Composers, Dr. Franz Lizst and Anton Rubinstein, use the Steinway pianos exclusively, and pronounce them the standard pianos of the world. Many of the best judges in America say the same. We also speak from personal knowledge, as two of our Officers have for years each had one at home. This splendid Premium may be secured by many persons. Sending us 625 subscribers at $1.60 each will do it. *Many Ladies, and some Men, have secured this Premium*, and some have obtained two or more, and sold the extra ones, thus securing large salaries. Classes of Young Ladies at school can unite in canvassing, and obtain a present for a Teacher, or a Piano for their school-room. We shall be glad to give this premium to a large number. Send to MESSRS. STEINWAY & SONS, NEW YORK CITY. for a *free* circular describing it.



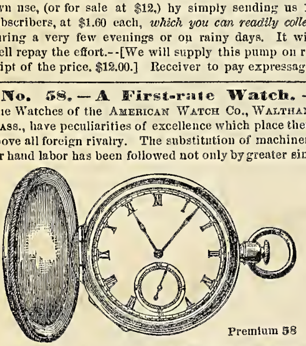
Premium 56

No. 57.—W. S. Blunt's "Universal Force Pump."—[Patented July 28, 1876.]—*See Engraving.*)—What most country families need. An *indoor Force Pump* for 1¼ inch Suction Pipe; capacity 15 to 18 gallons per minute. These pumps are tested to 150 pounds pressure, and will throw water from a hose pipe 50 feet high, and 90 feet horizontally, and have revolving tops, so that they can be made right or left hand. Being operated by a side shaft entering through the air-chamber, there is no *piston rod* to wear out brass stuffing box as in other pumps. They are among the *most powerful, simple*, and *durable pumps to be had.* The ease with which any part can be *renewed* in case of accident, or *access* had to the interior for repairs, commends them for green-houses, farmers, and stockmen, as well as for *city* use. Send for a descriptive circular to THE NASON MANUFACTURING Co., 71 Beekman St., and 71 Fulton St., New York; and secure a *free* one through us for your own use, (or for sale at $12,) by simply sending us 19 subscribers, at $1.60 each, *which you can readily collect* during a very few evenings or on rainy days. It will well repay the effort.--[We will supply this pump on receipt of the price. $12.00.] Receiver to pay expressage.



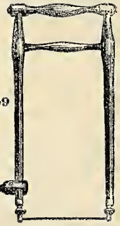
Premium 57

No. 58.—A First-rate Watch.—The Watches of the AMERICAN WATCH Co., WALTHAM, MASS., have peculiarities of excellence which place them above all foreign rivalry. The substitution of machinery for hand labor has been followed not only by greater simplicity, but by a precision in detail, and accuracy and uniformity in time-keeping qualities, which by the old method of manufacture are unattainable. A smoothness and certainty of movement are secured, which proceed from the perfect adaption of every piece to its place. The extent of the Waltham establishment, the combination of skilled labor with machinery perfect and ample, enable them to offer watches at the lowest rates. Their annual manufacture is said to be double that of all other makers in this country combined, and much larger than the entire manufacture of England. The mechanical improvements and valuable inventions of the last fifteen years, whether home or foreign in their origin, have been brought to their aid, and the presence of nearly 800,000 Waltham Watches in the pockets of the people, is the best proof of the public approval. We offer a Silver watch, jeweled, with chronometer balance, warranted by this Company as made of the best materials in the best manner, and in a heavy *pure coin-silver "hunting" case;* weight 3 oz. This watch we offer as a Premium, with the fullest confidence. Many persons have secured this Premium, and *hundreds of young men and others, can this fall and winter become the owner of one without cost, by devoting a few evenings to raising a club.* The 44 subscribers, at $1.60 each, which will secure this splendid $30 Watch *free*, can be collected in almost any town. TRY IT.



Premium 58

No. 59.—Bracket Saw.—(*See Engraving.*)—Although this is a little thing, size of frame being about 6×12 inches, it is sufficient for the manufacture of very many *ornamental and useful* articles, as Book Rests, Brackets, Boxes, etc., which the ingenuity of any person, young or old, may devise. The frame is rosewood highly polished, and the saws of tempered steel, *four* of which, with *Designs* and *Directions*, are sent with the frame. Our own boys of 10 years and upwards have made many brackets, etc., for us the past year, worth 50 cts. to $1.50 each, doing it at odd hours, when without this they might have been allured to undesirable company. It is a most valuable implement. Any Boy (or Man) will spend many an hour with this, which might be *worse* employed, and not only develop ingenuity and skill, but also turn out useful and ornamental articles. We have seen a humble Parlor *wholly* adorned with brackets, frames, shelves, etc., which were mainly prepared by father and son from the wood of cigar boxes, with some from cedar and other shingles, and thin boards. The room was as attractive and pleasing to us, under the circumstances, as some drawing-rooms furnished with costly brackets, etageres, etc., at a cost of hundreds of dollars. *Four* subscribers *only*, at $1.60 each, sent to us, will secure this Bracket Saw, *free*, post-paid. Made for us by the MILLER'S FALLS MANUFACTURING Co., 74 Chambers St., N. Y.—[We will send the saw, etc., post-paid, on receipt of the price, $1.25.]

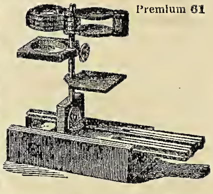


Prem. 59

No. 60.—Payson's Indelible Ink, and Briggs' Marking-Pen Combination.—(*See Engraving.*)—Payson's Indelible Ink is too well known to need further commendation. It is almost Indispensable in the family. Briggs' Marking-Pen has been before the public for fifteen years, and is justly celebrated for all kinds of marking, and particularly for writing upon coarse fabrics. The Pen and Ink bottle are put up in a neat box-wood case; the glass pen unjoints in the middle and fits inside the case. The whole is thus portable and always ready for use, and protected from injury by evaporation or breakage. *We have used this pen and ink for several years with entire satisfaction.* Presented, and sent post-paid, to any one who simply sends us 3 subscribers, at $1.60 each.—[We will send a bottle of the Ink, with Pen, post-paid, on receipt of 75 cents.]

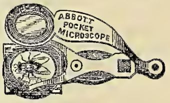
Premium 60

No. 61. — Excelsior Pocket and Dissecting Microscope.—(*See Engraving.*)—The microscope reveals to us a beautiful world unseen by the unaided eye, and hardly conceived of, until one has the microscope before him. One of these instruments (the best obtainable) ought to be in every family, in country and city. It will furnish rational amusement for *old* and *young*, diverting the mind from baser pleasures, enlarging the conception of the skill and wisdom displayed in creation, to say nothing of its usefulness in examining and detecting a multitude of noxious insects. We have long sought an instrument of this kind that, while complete enough to be of any use, would be *cheap* enough for general introduction. That which we now offer, though not having the power and appliances of one costing $20 to $100, or more, is yet very valuable and serviceable for the price, and the best we can obtain for any thing like the cost of this, and we are happy in being able to *present* such an instrument, and send it post-paid, to every one, sending us barely seven subscribers, at $1.60 each. The Premium Microscope (shown in the engraving,) is supplied with *three Lenses*, and is packed in a neat case for the pocket. It is patented by J. J. Bausch, of Rochester, N. Y., and is manufactured for us by the BAUSCH & LOMB OPTICAL Co., and it is for sale by the dealers in optical instruments generally.--[We can supply one, and send it post-paid, for $2.75.] Every family should have one.



Premium 61

No. 62.—Abbott's Pocket Microscope.—We offer this little instrument to those who desire one still lower priced than the Excelsior. Insects alive or dead, or other small objects can be examined under it. It also has an attachment for counting the threads in linens or other fine goods. It is simple and convenient, and each instrument is enclosed in a case labeled with instructions for use. Manufactured by L. G. ABBOTT, No. 103 Beekman St., New York. Only four subscribers, at $1.60 each, will secure one *free*, post-paid.—[Or we will supply one, post-paid, for $1.50.]



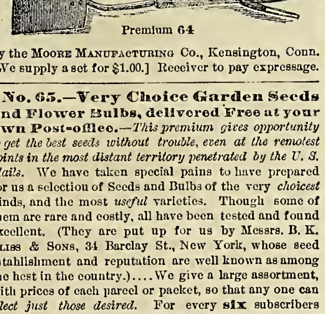
Premium 62

No. 63.—Cahoon's Broadcast Seed-Sower.—This Hand Seed-Sower sows from four to eight acres per hour, at a common walking gait, throwing wheat and rye from 30 to 36 feet wide; barley, 30 feet; hemp, 28 feet; oats. 23 feet; clover, Millet and Hungarian seed, 22 feet; and Timothy, 18 feet. Price, $5. Presented to any sender of 12 subscribers for *Agriculturist*, at $1.60 each. It is manufactured by the GOODELL Co., at Antrim, N. H.—[We will supply one on receipt of the price, $5.] Receiver to pay express charges.

Prem. 63

No. 64.—Moore's Floral Set.—This is a beautiful Premium—a complete set of **Ladies' or Children's Garden Tools,** for the cultivation of flowers, consisting of a *Floral Hoe, Spade, Fork* and *Rake*, (as shown in the engraving). They are made of the *best steel and iron*, with finely polished *hard-wood* handles, light, durable, and highly finished, and each set inclosed in a box. They will be found very convenient in the garden or greenhouse. They are *useful*, pleasing toys for the little folks, requiring *only* 3 *subscribers*, at $1.60

each, *to get them free* Better get more subscribers, and secure half a dozen sets or more, for others, to come with yours, as they can all come cheaply as freight. Made



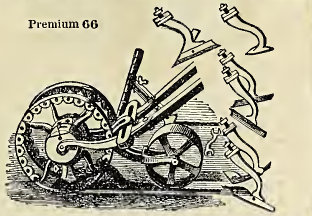
Premium 64

by the Moore Manufacturing Co., Kensington, Conn. [We supply a set for $1.00.] Receiver to pay expressage.

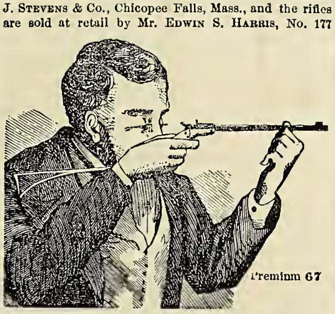
No. 65.—Very Choice Garden Seeds and Flower Bulbs, delivered Free at your own Post-office.—*This premium gives opportunity to get the best seeds without trouble, even at the remotest points in the most distant territory penetrated by the U. S. Mails.* We have taken special pains to have prepared for us a selection of Seeds and Bulbs of the very *choicest* kinds, and the most *useful* varieties. Though some of them are rare and costly, all have been tested and found excellent. (They are put up for us by Messrs. B. K. Bliss & Sons, 34 Barclay St., New York, whose seed establishment and reputation are well known as among the best in the country.)....We give a large assortment, with prices of each parcel or packet, so that any one can *select just those desired.* For every **six** subscribers sent us at $1.60 each, we will forward **two dollars' worth** of the following seeds, securely packed and *post-paid.* (An additional dollar's worth of seeds can be ordered for every three subscribers above six); *all delivered free*....Here is the list to select from: 1 pint of New Dwarf White Wax *Beans*, 40c.; 1 packet Dreer's Improved *Lima Bean*, 20c.; 1 oz. of New Egyptian Blood Turnip *Beet*, 20c.; ¼-pint packet of New Triumph *Corn*, 15c.; ¼ oz. of Early Wyman *Cabbage*, 40c.; ¼ oz. of Marblehead Mammoth *Cabbage*, 40c.; ¼ oz. of Premium Flat Dutch *Cabbage*, 15c.; 1 pkt. Henderson's Early Summer *Cabbage*, 25c.; ¼ lb. Bliss's Improved Long Orange *Carrot*, 40c.; 1 pkt. Erfurt Earliest Dwarf *Cauliflower*, 50c.; 1 pkt. Erfurt Large White *Cauliflower*, 25c.; ¼ oz. Crawford's Half Dwarf *Celery*, 25c.; 1 pkt. Sulham Prize *Celery*, 25c.; 1 oz. finest pickling variety *Cucumber*, 30c.; 1 pkt. *Eucalyptus Globulus* (Australian Gum Tree), 25c.; 1 pkt. Black Pekin *Egg-Plant*, 15c.; ¼ oz. Early Hanson *Lettuce*, 50c.; 1 oz. of Hackensack *Melon*, 20c.; 1 pkt. Haskell's Excelsior *Water Melon*, 15 c.; 1 ounce of New Queen *Onion*, 50c.; 1 oz. of White Globe *Onion*, 25c.; 1 pint Laxton's Alpha *Peas*, 35c.; 1 pint Early Premium Gem *Peas*, 40c.; 1 oz. of Marblehead *Squash*, 25c.; 2 oz. of Turban *Squash*, 40c.; 1 oz. Arlington *Tomato*, 30c.; 1 pkt. Golden Trophy *Tomato*, 15c.; 1 oz. Conqueror *Tomato*, 40c.; 1 pkt. Little Gem *Tomato*, 15c.; 1 Lilium auratum, or New Gold-banded *Lily*, from Japan, 50c.; 1 Lilium lancifolium rubrum, Japan *Lily*, red, 40c.; 1 Lilium lancifolium album, Japan *Lily*, white, 50c.; 24 *Gladioluses*, fine mixed varieties, $1.00; 1 dozen Mexican *Tiger Flowers*, $1.25; 1 doz. *Tuberoses*, Double Italian, best, $1.50; 1 doz. *Hyacinths*, double and single, in three colors, red, blue, and white (for *fall* planting), $1.50; 4 dozen *Tulips*, double and single, early and late (for fall planting), $2.00; 100 *Crocuses*, fine varieties (for fall planting), $1.00.—Get some of these this month.

No. 66.—Allen's Planet Jr. Combined Drill and Wheel Hoe.—[See engraving, next column, of the "Planet Junior Hand Seed Drill and Wheel Hoe."] This popular hand implement for sowing and hoeing drilled crops, has been **greatly improved** for **1878**; having opening Plow, Spout, Roller, Carrier, and Subsoilers of entirely new, and of greatly superior patterns. The remaining parts of the machine are also now subjected to close scrutiny in manufacture and testing, the makers being determined to leave nothing undone that will improve this favorite tool. The Cylindrical Brass Seed Hopper revolves *with the carrying wheels*, preventing all packing and clogging so usual in upright hoppers, especially with rough, chaffy, or soaked seeds; the holes can be minutely adjusted all at once, *not confining you to unsuitable sizes*, and each is covered by a patent shield or cup which discharges only *after reaching the bottom, insuring* regular dropping. The Plow works between the carrying wheels, opening *just at the depth set*, avoiding the tiresome watch or skilled labor usually necessary, and depositing the seed in a *straight narrow line*, an important advantage in cultivation. The covering is done as shown in the cut, the plow throwing the earth upon the wheels, which continually return it exactly on top of the seed. It sows all Garden and small Nursery seeds, also shows the seed as it drops, never injures it, never clogs, drops evenly, covers with perfect regularity, rolls down light or heavy, marks the next row, (superior *new* style marker), and turns at the ends on the roller, without pausing or sowing. THE COMBINED MACHINE holds one quart. Both sizes work with the smallest amount of seed, and can be made to drop in hills at different distances. The Combined Machine becomes a Wheel Hoe *by removing one bolt.* It has *two* pairs of *tempered steel* hoes, one for delicate work close to the plants, leaving the ground level; the other for throwing heavy furrows to or from the row, and for covering Corn, Peas, Beans, Potatoes, etc. It also has a pair of *subsoilers* for deep stirring, and a shovel plow for thorough cultivation, and for opening drills for Peas, Beans, Corn, Potatoes, etc. At the first tending, the machine works beautifully *as a Double Wheel Hoe*, afterwards *between* the rows. With this size, Onion-growers can sow their crop any depth, width, or thickness, and also do all the hoeing with surprising ease, rapidity, and perfection. Manufactured by S. L. Allen & Co., No. 119 South 4th St., Philadelphia. Sending only 19 subscribers for the *American Agriculturist* at $1.60 a year, will secure this valuable implement *free*, including all the parts named above, delivery unpaid. [Or we will forward these valuable combinations on receipt of $12.00.] Receiver to pay express charges.

Premium 66



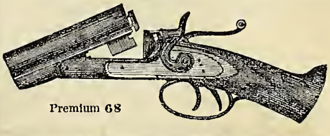
No. 67.—Breech-loading Pocket Rifle.—(*See Engraving.*)—This remarkable little fire arm weighs only eleven ounces, yet shoots with great accuracy and power from 30 to 100 yards, or more, and can be loaded and fired five times a minute. It can be carried inside the vest, and is accompanied by an extension breech, so that it may be used either as a pistol or like a rifle. Is in a *neat mahogany case*, with 250 rounds of ammunition. The manufacturers are Messrs. J. Stevens & Co., Chicopee Falls, Mass., and the rifles are sold at retail by Mr. Edwin S. Harris, No. 177 Broadway. Only 24 subscribers, at $1.60 each, required to get it *free.* ☞ Without the mahogany case, we will give it, packed in a pasteboard box, all complete, with 100 cartridges, on receipt of 18 subscribers, at $1.60 each.—[We will sell one for $16.00.] Receiver to pay expressage.



Premium 67

General Notes on the Premium Fire Arms.—To meet a general desire, we have arranged to supply some *valuable weapons* from the noted and reliable establishments of E. Remington & Sons, Ilion, N. Y., and 283 Broadway, N. Y. City. The Remington's are natural mechanics, and supervise their own work; they employ the most skillful workmen, and turn out the best work that human skill can produce. Several millions of their weapons are in use. Any one desiring a fuller description, can obtain a *free* descriptive manual by sending to E. Remington & Sons, 283 Broadway, N.Y.

No. 68.—Double-Barreled Gun. Breech-Loading, Central Fire. Remington's.—Many of these were given as Premiums last year, and they gave such high and general satisfaction, that we offer them again. This is one of the finest guns ever offered the American Sportsman, combining all the most desirable features of the best imported, together with some valuable improvements not found in any other. As an effective gun this is just as good as many of those imported at a cost of $150 to $200, or more. *No better Shooting Gun can be obtained anywhere, at any price, however high.* With the loaded shells in the pocket, one can load and fire the gun several times a minute. On seeing a hawk approaching, we have slipped out a charge of small bird shot, put in a load of larger shot, and brought down the hawk. It is equivalent to carrying several guns, loaded with various charges of ammunition for different game. This valuable fire arm has steel barrels, using paper or brass cartridges that can be re-loaded many times, 2 dozen of which, and reloader (costing $4) and 500 primers or caps, (costing $1), *are given with the gun.* Price $50. Manufactured by E. Remington & Sons, 281 and 283 Broadway, New York. P. O. Box 3,994. Armory at Ilion, N. Y. Sending us 66 subscribers at $1.60 each will secure this splendid premium *free.* Many got this premium last year. —[On receipt of $50, we will forward one to any address.] Receiver to pay charges by express or freight.

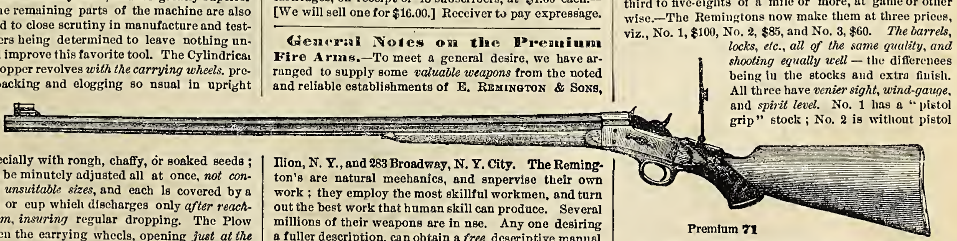


Premium 68

No. 69.—A very Low-Priced Shot-Gun, but Useful One.—*Single Barrel, Muzzle-Loader.*—Price only $6. This will answer well where wanted for only occasional use, and where rapid loading or firing is of no account. It is as good as the guns we used to buy at $15.00 each. It is made by E. Remington & Sons, which is a sufficient guarantee of its good quality. We will *present* one of these guns to any person forwarding us only 14 subscribers at $1.60 each, very easily collected. [For $6.00 we will forward one by express or otherwise.] Receiver to pay express charges.

No. 70.—Remington's Shot-Gun, Breech-Loading, Remington Action; Single Barrel, Low priced.—Fine Quality Barrel. 32 inch. No. 16 Gauge. For all ordinary purposes, this is a very useful gun, of superior quality. It can be loaded (at the breech) and fired 5 to 10 times a minute. (See notes over No. 68.) One or two dozen shells can be loaded with different sizes of shot, and carried in the pocket ready for any size game, from No. 10 shot for the smallest birds to Buck-shot for deer or other large animals at short range. The gun is plain, but shoots just as well as the most costly carved and ornamented weapons. Price $18, which includes Cleaning Rod and Loading Stick. To this we add 24 shells, 500 primers or caps, and re-loader, for $5, the whole costing $23.00. The shells can be re-loaded a great many times. Those wishing to carry more than 24 charges can have more shells at $1.80 per dozen. We give the above Gun, Re-loader, 24 Shells, 500 Primers, Cleaning Rod, etc., to any one sending us only 34 subscribers at $1.60 each. We will add 3 shells, if desired, for every subscriber at $1.60 above 34. [We will forward the above complete, to any address on receipt of $23.00.] Carriage paid by Receiver.

No. 71, 72, 73. Long Range Creedmoor Rifles at Greatly Reduced Prices.—The Remington Rifles are used by most of the successful competitors at the International, State, and other rifle contests, and are a great desideratum for shooting one-third to five-eighths of a mile or more, at game or otherwise.—The Remingtons now make them at three prices, viz., No. 1, $100, No. 2, $85, and No. 3, $60. *The barrels, locks, etc., all of the same quality, and shooting equally well* — the differences being in the stocks and extra finish. All three have *venier sight, wind-gauge,* and *spirit level.* No. 1 has a "pistol grip" stock; No. 2 is without pistol grip; No. 3 has a military stock. Some prefer these; it is a good deal a matter of taste, the shooting and caliber of all being the same. We present No. 1 for 110 subscribers at $1.60 each; No. 2 for 100 subscribers at $1.60; No. 3 for 76 subscribers at $1.60. (Spirit Level with each.)



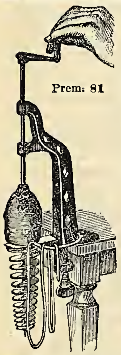
Premium 71

No. 74.—First-rate Hunting and Target Rifle.—Low Priced.—*Remington's make and patent. Breech Loader. Rim Fire.* For general use up to 1/3 of a mile, for hunting and target shooting, this is a valuable Rifle. The caliber may be 22, 32, 38, or 44/100, as desired. Except for larger animals, the 38 caliber is sufficient. We select the 28-inch barrel. Price only $22. We will present this valuable Rifle for 34 subscribers, at $1 60 each; or a 26-inch barrel ($21) for 32 subscribers; or a 30-inch barrel ($23) for 36 subscribers. The recipient to name what caliber he desires. [On receipt of the above prices, ($21, or $22, or $23,) we will forward one of these rifles by any conveyance desired.]

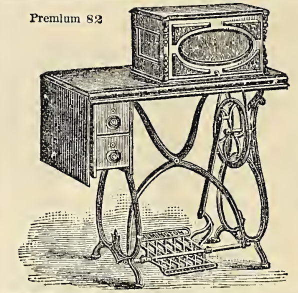
No. 75.—Remington's Vest-Pocket Pistol.—Full length 4 inches; weight 3½ ounces; caliber 22. Full nickel plated. Single Barrel. Price $3.75. Presented for 9 subscribers, at $1.60 each. [Or we will forward one by mail, post-paid, on receipt of price, $3.75.]

No. 76. — Remington Revolver, (Smoot's Patent.)—*Five Shot.* Length 6¾ inches, weight 10 ounces. Caliber 30. Finished in the best manner. Price $9.00. We will present this valuable weapon on receipt of 17 subscribers, at $1,60 each. For 18 subscribers we will send one of these Revolvers, nickel plated, (price $10.00.) [Forwarded to any address, post-paid, on receipt of the above prices.]—N.B. For 16 subscribers, we will present Remington's Double-Action, Self-Cocking Pocket Pistol (5-shot Revolver. Price $8.00).

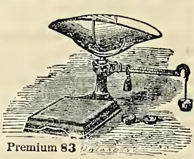
No. 77.—Turn-table Apple Parer, Improved.—No. 78. Climax Apple Corer and Slicer.—No. 79. Family Cherry Stoner.—No. 80. Bay State Apple Paring and Slicing Machine. No. 81. "Saratoga" Potato Peeler and Slicer.—(*See Engraving.*)—All the above machines are most useful in every household where apples, cherries, and potatoes are to be cared for. Manufactured by the Goodell Co., Antrim, N. H. We have never seen the work for which these machines were contrived, more rapidly or better done, than *they* will do it. The Apples are pared, cored, and sliced with the greatest facility, and the Cherries are readily relieved of their stones, leaving the fruit in good shape. The "Bay State Parer and Slicer" has a new attachment to the Knife Head which cuts the Apple into slices, and places them at one side in a dish on the table. The "Saratoga" slices and peels the potato at one operation, and is a very ingenious and useful contrivance. ☞ Only *three* subscribers, at $1.60 each, are required to get any one of the above, except No. 80, which requires *four.* For *sixteen* subscribers at $1.60 each, we will send the *whole* of them *free,* delivery unpaid. [Or we will supply any one of them at the price named (see Table).] Receiver to pay expressage. For prices see Premium Table, page 401.


Prem: 81

No. 82.—Remington Sewing Machine.—Price reduced $20.—"*A good Sewing Machine lightens the labor, and promotes the health and happiness of those at home.*" Any good sewing machine is a *great treasure* in any household; we would as soon think of abolishing the plow, and digging up the fields with a spade, as of being without a sewing machine. Upon the mother's health, vigor, and serenity, largely depend the child's health, vigor, and success in life, as well as his moral character. The everlasting "stitch, stitch, stitch," the bending over the work, the loss of sleep, and the lack of *right* exercise have brought tens of thousands to early graves, and seriously injured the health of millions upon millions. Reckoned in dollars, a sewing machine pays largely. If one cost $500 even, the interest on that, less taxes, would be about $32. The total sewing in most families is equal to at least 4 months of steady hand-sewing. If hired, this would cost, board included, $5 to $10 per week, or $85 to $170 a year, three-fourths of which would be saved by using a sewing machine that will work at least 4 times as fast. (cutting, basting, etc., included); or a *saving* of $50 to $100, or *more*, each year. We say to *every* man, Get your wife a Good Sewing Machine, even if you have to sell a favorite horse, or an acre or two of land—get the sewing machine any way. If you can get a machine through our premium list, and thus save the *cash* it would cost, well—but get the machine. (Multitudes have obtained them *free* through our premiums by collecting subscribers on rainy days and evenings. Almost any man or woman can readily do this. The premium list may be collected in your own neighborhood and elsewhere.) We offer one of the best of the leading machines, one which has been thoroughly tested and gives entire satisfaction. While all of the high-cost machines are valuable, each has some excellence peculiar to itself. The **Remington Family Sewing Machine** has sprung rapidly into favor, as possessing the best *combination* of good qualities, namely: light running, smooth, noiseless, rapid, durable, with perfect Lock Stitch. It is a Shuttle Machine, with Automatic Drop Feed. Its use is very readily acquired; it may be run at very high rate of speed; it is very durable; in construction it is of the best, and in design it is beautiful. —No charge for boxing the machines. They go safely as freight. Sending us 66 subscribers at $1.60 each will secure one *free.* For free circulars, giving full descriptions of our Premium Machines, write by letter or postal to the **Remington Sewing Machine Co.,** Ilion, N. Y., or to No. 283 Broadway, New York City.

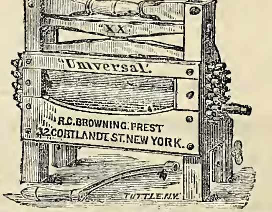

Premium 82

No. 83.—Family Scales.—These scales, combining the advantages of counter and platform scales, are peculiarly adapted to household purposes. (*See Engraving.*) They weigh from ¼ ounce up to 240 lbs. They have a scoop, or pan, for weighing flour, sugar, or other house stores, and a *platform* for heavier articles, and are just such an apparatus as is needed for in-door or out-door use, occupying less than 2 feet square. These scales are manufactured by the well-known Fairbanks & Co., No. 311 Broadway, New York, whose weighing apparatus has long ranked as the *standard* in all parts of the country. Send to them for circulars, if desired. Send us 21 subscribers, at $1.60 each, and get these fine Scales *free.*—[We will also supply these scales on receipt of the price, $14.00.] Receiver to pay expressage.


Premium 83

No. 84.—Universal Clothes Wringer. — (*See Engraving*) — A very *useful*, *time-saving*, *strength-saving*, *clothes-saving* implement, that should be in *every* family. Here is a thing that is of *great* value, "and no mistake about it." It will pay for itself several times a year in any family. The wringing out of clothes by hand is hard upon the hands, arms, and chest, and the twisting stretches and *breaks* the fibers with *lever* power. With this Wringing Machine, the garments are passed rapidly between elastic rollers, which press the water out better than hand wringing, and as fast as one can pick up the articles. A most important feature of this Universal Clothes Wringer is the peculiar *cog-wheel* arrangement, which makes both rollers turn together, and always keep their place. Without these, the crank-roller will slip, and pull the fibers, and injure the fabric. A multitude of letters of thanks for these Machines, given by us as Premiums, have been received. It is easy to gather at the regular rate of $1.60 each, the 16 subscribers, and this will secure a *present* of one of these very valuable $8.00 Universal Wringers. They are made by the Metropolitan Washing Machine Co., Middlefield, Ct. R. C. Browning, 32 Cortlandt St., N. Y. [We will supply one of these valuable machines on receipt of the price, $8.00]. Receiver to pay expressage.

Premium 84



No. 85.—The Great Dictionary.—Worcester's Large Pictorial Unabridged Edition. containing **1854 three-column pages,** with a *multitude of illustrative engravings.* (The work is a large quarto volume.) Most of the thoroughly educated men of the country consider this as by far the best Dictionary in the English Language. It gives the spelling and pronunciation of every word in the language with full explanations, and as a source of *general information* stands next to a Cyclopædia. The Dictionary can be called for at our office, or be sent anywhere by express or otherwise. *It should be in every family.* Let a multitude of Boys, and Young Men, *each* get 18 subscribers, at $1.60 each, and each secure this invaluable work. *A great many have done so in the past.* It is worth trying all winter, to get and own it; but you can probably get subscribers enough this month to obtain it *free.* It is published by Messrs. J. B. Lippincott & Co., Philadelphia. —[We will supply one of these Dictionaries for $10.00.] Receiver to pay expressage.

Nos. 86 to 97.—Here is a **GRAND COLLECTION,** giving in **Twenty-one Large Volumes,** a vast amount of most *Useful* and *Practical Information,* collected during **21** years by a great number of *active, earnest, intelligent, practical Men* and *Women,* and illustrated with **many thousands** of *beautiful, pleasing,* and *instructive* **Engravings,** that have *cost more than* **One Hundred Thousand Dollars.** These Volumes are alone a *large* and *valuable* Library, containing more varied information on all matters pertaining to the *Household,* the *Garden,* the *Farm,* and *kindred Subjects,* than can be found in books that would cost five times the price of these. Each of these 21 Volumes has a full Alphabetical Table of Contents, for readily referring to any article or subject in the Volume. The Volumes are newly printed, from the Original Electrotype Plates, from time to time as wanted. They are supplied *Bound* or *Unbound.* The **Unbound Volumes** (Premiums **86** to **91**) cost $1.75 each, including postage, and for ordinary use answer a good purpose. The **Bound Volumes** (Premiums **92** to **97**) are neatly bound in uniform style, with gilt title, etc.; they are very convenient, and finely adorn the Book-Case or Table. These cost $2.30 per Volume, including postage. We send all Volumes, bound or unbound, *paid through* by Mail or Express. Those obtaining less than the 21 Volumes, can select any Volumes desired from XVI to XXXVI. See Premium *Table,* page 401, for the number of subscribers required.

[READ THIS.]

Nos. 98 to 102.—BOOKS — Choice Books, for the **Farm,** the **Garden,** the **Household,** on **Architecture,** and **Other Subjects.** Premiums **89 to 101** are for specific amounts, which may be selected by the recipient from our long list, published in the advertising columns of every number of the *American Agriculturist,** in amounts of $10, $15, $20, $25, etc., as noted in the Table of Premiums. The Books will all be forwarded to the recipient **paid through** by Post or Express, to any place within the United States or Territories, and to the farthest point on our border, when to be sent out of the United States.—**N. B.**—Here is an opportunity, not only for individuals to obtain good books for themselves and families, *free,* but also for the **Farmers of a neighborhood to unite their efforts in raising a club of subscribers, and through these premiums get an Agriculturist Library for the general use of all.** Let some enterprising, public-spirited farmer in every neighborhood start this matter, ask his neighbors to help make up a list, and thousands of such Libraries will be established all over the country, which, with the copies of the *Agriculturist* thus scattered, will have a wonderful influence in developing thought, increasing intelligence and awakening inquiry, and the increased *profit* resulting will be beyond estimate.—**Premium 102** does not limit the amount of books, but *any one,* sending **25** or more names, may select any Books from our advertised List to the amount of 10 cents for each subscriber sent at $1.10 a year; or 30 cents for each name sent at $1.30 a year; or 60 cents worth for each name sent at $1.60 a year. *This Premium No.* **102** *is only offered for clubs of* 25 *or more.* ☞ *The Books for all the Premiums,* **98** *to* **102** *inclusive, will be sent by mail or express,* **pre-paid by us,** *as noted above.*

See also our Book List, published every month, in the advertising pages of the *American Agriculturist,* for prices at which any of our Books will be sent, post-paid.

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* **Descriptive Book List** sent free on application.

BOOKS for FARMERS and OTHERS.

[Published and for sale by the Orange Judd Company, 245 Broadway, New York. Any of these books will be forwarded by mail, *post-paid*, on receipt of price.]

Allen's (R. L. & L. F.) New American Farm Book	$2 50
Allen's (L. F.) American Cattle	2 50
Allen's (R. L.) American Farm Book	1 50
Allen's (L. F.) Rural Architecture	1 50
Allen's (R. L.) Diseases of Domestic Animals	1 00
American Bird Fancier	30
American Rose Culturist	30
American Weeds and Useful Plants	1 75
Atwood's Country and Suburban Houses	1 50
Atwood's Modern American Homesteads	3 50
Barber's Crack Shot	1 75
Barry's Fruit Garden	2 50
Bell's Carpentry Made Easy	5 00
Bement's Rabbit Fancier	30
Bicknell's Village Builder and Supplement. 1 Vol.	12 00
Bicknell's Supplement to Village Builder	5 00
Bommer's Method of Making Manures	25
Boussingault's Rural Economy	1 60
Brackett's Farm Talk ....paper, 50 cts.; cloth.	75
Breck's New Book of Flowers	1 75
Brill's Farm-Gardening and Seed-Growing	1 00
Broom-Corn and Brooms ....paper, 50 cts.; cloth	75
Brown's Taxidermist's Manual	1 00
Bruckner's American Manures	1 50
Buchanan's Culture of the Grape and Wine Making	75
Buel's Cider-Maker's Manual	1 50
Buist's Flower-Garden Directory	1 50
Buist's Family Kitchen Gardener	1 00
Burges' American Kennel and Sporting Field	4 00
Burns' Architectural Drawing Book	1 00
Burns' Illustrated Drawing Book	1 00
Burns' Ornamental Drawing Book	1 00
Caldwell's Agricultural Chemical Analysis	2 00
Canary Birds. Paper 50 cts. Cloth	75
Chorlton's Grape-Grower's Guide	75
Cleveland's Landscape Architecture	1 50
Cobbett's American Gardener	75
Coburn's Swine Husbandry	1 75
Cole's American Fruit Book	75
Cole's American Veterinarian	75
Cooked and Cooking Food for Domestic Animals	20
Cooper's Game Fowls	5 00
Copley's Plain and Ornamental Alphabets	3 00
Corbett's Poultry Yard and Market....pa., 50 cts.; cloth	75
Croff's Progressive American Architecture	10 00
Cummings' Architectural Details	10 00
Cummings & Miller's Architecture	10 00
Cupper's Universal Stair-Builder	3 50
Dadd's Modern Horse Doctor, **12mo.**	1 50
Dadd's American Cattle Doctor, **12mo.**	1 50
Dadd's American Cattle Doctor, **8vo**, cloth	2 50
Dadd's American Reformed Horse Book, **8vo**, cloth	2 50
Dana's Muck Manual	1 25
Darwin's Variations of Animals & Plants. 2 vols. [new ed.]	5 00
Dead Shot; or, Sportsman's Complete Guide	1 75
Detail Cottage and Constructive Architecture	10 00
De Voe's Market Assistant	2 50
Dinks, Mayhew, and Hutchinson, on the Dog	3 00
Downing's Landscape Gardening	6 50
Dwyer's Horse Book	2 00
Eastwood on Cranberry	75
Eggleston's Circuit Rider	1 75
Eggleston's End of the World	1 50
Eggleston's Hoosier School-Master	1 25
Eggleston's Mystery of Metropolisville	1 50
Eggleston's (Geo. C.) A Man of Honor	1 25
Elliott's Hand Book for Fruit Growers....pa., 60c.; clo.	1 00
Elliott's Hand-Book of Practical Landscape Gardening.	1 50
Elliott's Lawn and Shade Trees	1 50
Elliott's Western Fruit-Grower's Guide	1 50
Eveleth's School House Architecture	6 00
Field's Pear Culture	1 25
Flax Culture. [Seven Prize Essays by practical growers.]	30
Flint (Charles L.) on Grasses	2 50
Frank Forester's American Game in its Season	3 00
Frank Forester's Field Sports, 8vo., 2 vols	6 00
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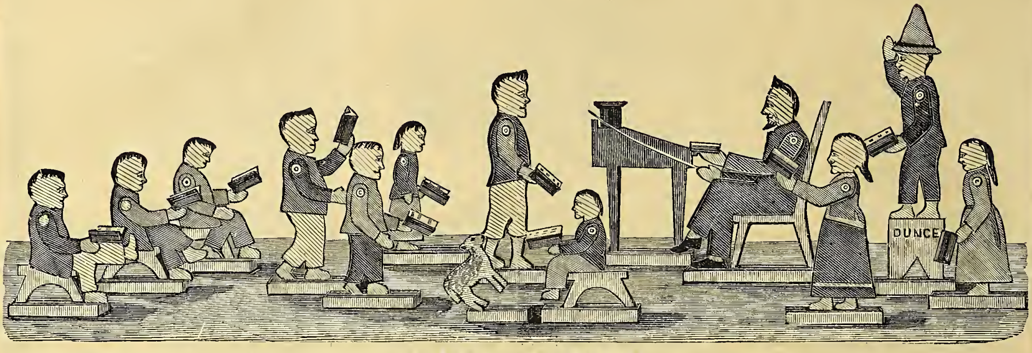

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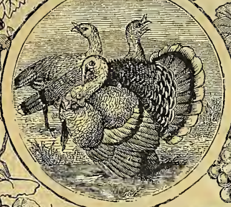

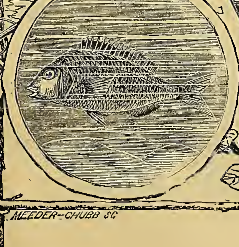

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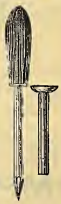

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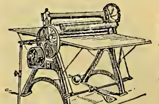

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AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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PUBLISHERS AND PROPRIETORS.
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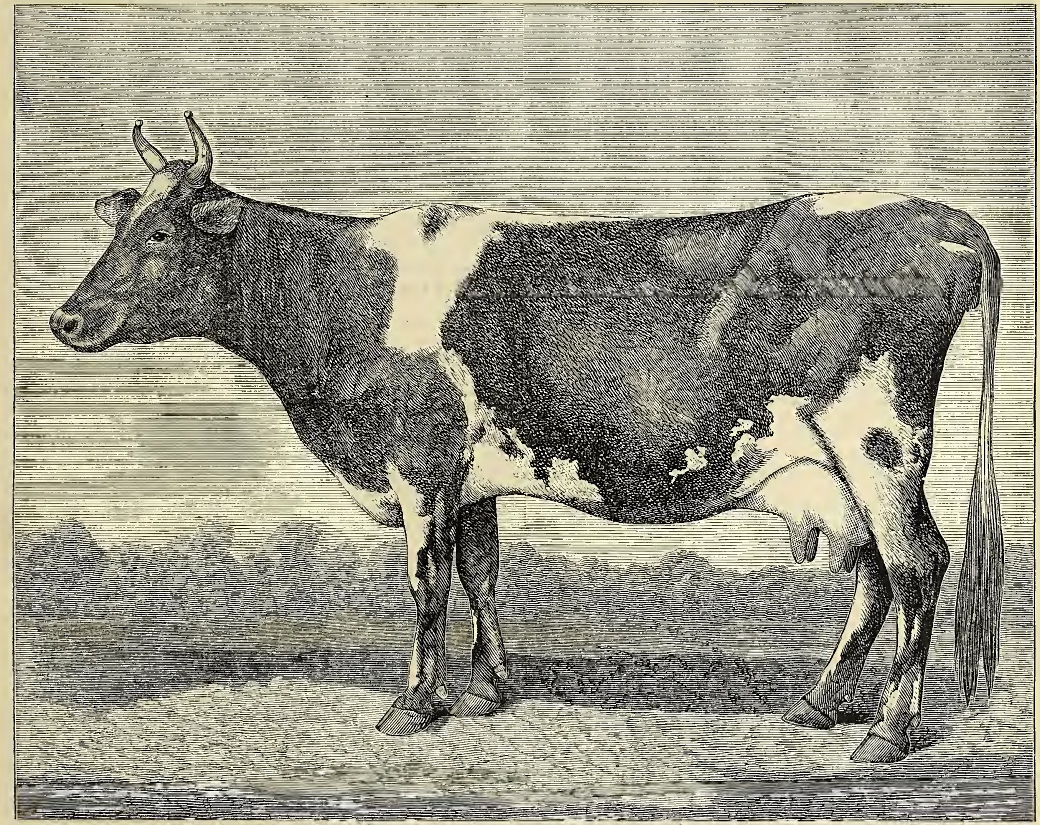

GRADE JERSEY COW "UNION."—BRED BY THOMAS FITCH, NEW LONDON, CONN.

Occasionally we come across or hear of an extra good cow, and several such have been from time to time mentioned in the *American Agriculturist.* We shall be glad to hear of still others, and to receive photographs of them to place in our gallery of pictures of noteworthy animals. We have given numerous portraits of choice thoroughbred, herd book animals of different breeds, but it by no means follows that *all* herd book cows are choice ones, nor that all others are inferior. The best animals for common use, whether for milk, butter, or meat, are grades. But there could be no grades if it were not for pure bred stock; therefore, as every body cannot breed pure animals, the business must be divided, and a few must raise pure breds, to supply the majority with breeding animals for the production of grades. Whenever we come across an excellent grade, the merit of some choice pure bred is reflected, and if farmers would carefully select their best cows and breed them to good pure bred bulls from richly milking dams, their product of butter might be greatly increased without any unreasonable cost, or at a very small expense. Extra good cows are scarce and bring a high price for family use, and breeders who give their attention to the business cannot fail to be well rewarded for their enterprise. To be a successful breeder needs tact and experience, but for the encouragement of those young farmers who desire to excel in this way, we cite an example of a successful breeder of high milking grade family cows, and give a portrait of one of his animals. The breeder referred to is Mr. Thomas Fitch, of New London, Conn. Through a long and active life he has been engaged in breeding choice cows, both pure bred for breeders uses, and grades for family use. His experience is, therefore, very extensive. In sending the portrait reproduced above, which is of a grade Jersey and Ayrshire, he writes: "This cow has given 16 quarts of milk per day, and has made 11¼ lbs. of butter per week. The largest yield of milk and butter I ever knew of, was from such a grade, owned by me some years ago. She was "Lady Paterson," lived more than 24 years, had 15 heifer calves in succession, and when 15 years old made 17¼ lbs. of butter in one week, besides supplying the milk and cream used in a large family. My rule is to select only the calves of the best milking cows, such as have quiet dispositions, and to cross them with the best Jersey bulls." Mr. Fitch having long been in this business is always supplied with materials for his purpose, and few breeders have raised a larger number of valuable cows than he has. The results of his experience are, that for all practical purposes, whether on the farm, or in the dairy, or for the family, the grades are the most desirable for constitution, size, form of udder and teats, are most productive of milk, cream, and butter, and last but not least, they have beauty of appearance and gentleness of disposition.

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Calendar for November.

Day of Month.	Day of Week.	Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.			N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.			Washington, Maryland, Virginia, Kentucky, Missouri, and California.		
		Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.	Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	T	6 31	4 53	2 1	6 31	4 56	2 2	6 28	5 0	2 3
2	F	6 35	4 52	3 18	6 32	4 55	3 16	6 29	4 58	3 15
3	S	6 36	4 51	4 33	6 33	4 54	4 31	6 30	4 57	4 29
4	S	6 38	4 50	5 51	6 34	4 53	5 47	6 31	4 56	5 44
5	M	6 39	4 48	sets	6 36	4 52	sets	6 32	4 55	sets.
6	T	6 40	4 47	5 15	6 37	4 51	5 22	6 33	4 54	5 30
7	W	6 42	4 46	6 5	6 38	4 50	6 12	6 34	4 53	6 19
8	T	6 43	4 45	7 1	6 39	4 49	7 9	6 36	4 52	7 16
9	F	6 44	4 44	8 5	6 41	4 48	8 11	6 37	4 51	8 19
10	S	6 45	4 43	9 10	6 42	4 47	9 16	6 38	4 50	9 21
11	S	6 47	4 42	10 15	6 43	4 46	10 19	6 39	4 50	10 24
12	M	6 48	4 41	11 18	6 44	4 45	11 23	6 40	4 49	11 25
13	T	6 49	4 40	morn	6 45	4 44	morn	6 41	4 48	morn
14	W	6 50	4 39	0 20	6 46	4 43	0 22	6 42	4 47	0 24
15	T	6 51	4 38	1 22	6 47	4 42	1 22	6 43	4 46	1 23
16	F	6 53	4 37	2 23	6 49	4 41	2 22	6 44	4 45	2 22
17	S	6 54	4 36	3 26	6 50	4 40	3 24	6 46	4 45	3 23
18	S	6 55	4 36	4 32	6 51	4 40	4 29	6 47	4 44	4 26
19	M	6 57	4 35	5 42	6 52	4 39	5 37	6 48	4 43	5 31
20	T	6 58	4 34	rises	6 53	4 38	rises	6 49	4 43	rises
21	W	6 59	4 33	4 45	6 55	4 38	4 52	6 50	4 42	4 58
22	T	7 0	4 33	5 39	6 56	4 37	5 48	6 51	4 41	5 56
23	F	7 2	4 32	6 48	6 57	4 37	6 55	6 52	4 41	7 2
24	S	7 3	4 32	8 3	6 58	4 36	8 8	6 53	4 41	8 14
25	S	7 4	4 31	9 20	6 59	4 36	9 25	6 54	4 40	9 29
26	M	7 5	4 31	10 36	7 0	4 35	10 39	6 55	4 40	10 42
27	T	7 6	4 30	11 51	7 1	4 35	11 52	6 56	4 40	11 54
28	W	7 7	4 30	morn	7 2	4 34	morn	6 57	4 40	morn
29	T	7 8	4 29	1 3	7 3	4 34	1 4	6 58	4 40	1 4
30	F	7 9	4 29	2 17	7 4	4 34	2 16	6 59	4 39	2 14

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	5	3 55 mo.	3 43 mo.	3 31 mo	3 19 mo.	2 49 mo.
1st Quart	12	7 0 ev.	6 48 ev.	6 36 ev.	6 24 ev.	5 54 ev.
Full M'n	20	5 35 ev.	5 23 ev.	5 11 ev.	4 59 ev.	4 29 ev.
3d Quart.	27	5 22 ev.	5 10 ev.	4 58 ev.	4 46 ev.	4 16 ev.

AMERICAN AGRICULTURIST.

NEW YORK, NOVEMBER, 1877.

We are rapidly approaching better times. Already business is improving, and there is a promise of an era of prosperity. Although "the melancholy days" of autumn are come, everything conspires to encourage us. We have had a fine season for fall sowing, and our grain has gone into the ground in the best condition. The fall work is generally ahead, and every farmer is busy. Circumstances generally, have greatly tended to make farmers contented with their position. They have been taught that the farm is a secure haven in times of business storm and disturbance. That the profits of farming, if not large, are safe and certain. In Nevada, where farms and gold and silver mines lie contiguous to each other; it is the farmer who makes the greater profit, for it is proved by the statistics of the State, that the capital invested in farms yields a better and more regular return, than does that employed in the mining the precious metals. For one paying gold mine, there are fifty that either do not pay, or that totally ruin the owners. On the contrary, there is not one farm that does not pay a fair return, and many that pay richly for good management. The time is past, for another long period, when there will be so much talk about "the boys leaving the farm." They can not find a better place, and hundreds of young men are now leaving the cities to go upon farms. Comfort and happiness will, as in the past, dwell with the frugal and industrious, and in the history of the world the most notable instances of private and public virtue, have been found amongst those whose lives have been simple, unpretentious, and laborious. The first battle of the Republic was fought by farmers, and its great sustaining power will always consist of the farmers first, who are the most numerous class of citizens, and after them the intelligent artisans, mechanics, and other industrious workers. There are other classes who are equally useful, but being in a great minority, thus exert a less influence. But the farmer who feeds the world, and those who house and clothe it, must always exert a preponderating influence in proportion to the intelligence they possess, and the skill with which they perform their several labors.

◆

Hints for Work.

Fall Plowing.—Don't let the plow rust in the furrows. So long as there is any plowing to be done, let it be done at once, and as soon as finished, clean off the plow, grease, or lime-wash, the moldboard and share, and put it away in the tool shed.

Gather up all the tools, clean them, coat the wood work with crude petroleum, or some common lead and oil paint, and store them in their proper places. Tools will last twice as long if thus kept.

Prepare for Winter.—Whatever preparation is needed for winter, should be be begun now, or before snow falls. A little foresight saves much trouble.

Stacks should be well protected, and the coverings repaired, if necessary, (see article on page 427). Store a sufficient supply of fodder and litter in the barn, and over the stables and sheds for present use.

Thrashing.—A two-horse tread-power and thrashing machine mill be found very useful. These machines are made very portable, and are easy to be moved from place to place. As one set can do the work of several farms, money may be earned by thrashing for the neighbors after the work at home has been done. With these machines thrashing is done quietly and easily, without any of the "hurly-burley" of a hired set, and without waste of grain or straw, or overworking the horses.

Corn-Husking.—With the use of machines, and the need for economy in every form of labor, all the so-called "poetry of farm work" has disappeared. The old-fashioned corn-huskings in the barn will soon no more be held, and, along with the old-fashioned festive "harvest homes," will be soon only remembered in story. These homely frolics must give way to more sedate and less costly labor, and now the sooner the corn-husking is out of the way, the better. The fields should be cleared at once, and when everything is under cover, there will be time for more comfortable frolicking indoors.

Take care of the Fodder.—When corn is husked, the fodder should always be carefully set up, if it is not yet thoroughly cured. We some time ago referred in these hints to the manner of setting up shocks, and the number of hills in each. A couple of considerate Western correspondents kindly wished to inform us in regard to the number of hills put into a shock, stating the number to be from 144 to 256. We were well aware of this, but were speaking of the manner of putting up shocks to stay put up, and to save the fodder in the best way, and not merely to be heaped together for harvesting the corn. Moderate-sized shocks will cure better than very large ones, and 25 or 49 hills make a shock large enough to bind. House or stack the stalks as soon as dry enough to be safe from mildew. While drying in the field, four or more corn shocks may be put into one fodder shock.

Roots that have been gathered, should be made secure in the pits before the cold weather comes on. Look out that there is ample ventilation from the bottom to the top of the heaps. Three-cornered spouts, with a number of holes bored in each, to admit air, may be put every 8 or 10 feet apart in a long pit, or one for each small pit. These will carry off the heated air which arises in all newly made pits of any sort of roots, which would cause rotting were its escape not thus provided for.

Roots that have not been harvested, may be suffered to grow so long as the weather is mild. Late turnips will make considerable growth now, during the cool weather. As soon as one or two sharp frosts have occurred, these late crops may be taken up; but this is not likely to happen, unless in far northern localities, until the end of the month.

Frozen Leaves are injurious to cattle, and should not be given to them, but carted to the compost heaps.

Horses should be provided with blankets for use when exposed to storms. These may be procured very cheaply, and their cost will be saved more than once or twice during the winter. We do not approve of using blankets in the stable, however cold the weather may be. This practice makes the horse more sensitive to cold when brought out. Blankets are for use only to protect against unusual exposure, and when the horse is warm.

Winter rations for a work horse, may now be given safely. Our practice is to mix half a bushel of cut hay or fodder, with 3 pounds of feed of oats, corn, and bran ground together, for one feed for each.

horse. The cut hay is thoroughly wetted in a box; the meal is scattered over it; a handful of salt for each horse is added, and the whole is well mixed with the shovel. It is then divided equally. A similar custom prevails in large stables, where hundreds of animals are kept; for economy and good results in every way, it can hardly be surpassed.

Live Stock.—For hints regarding the management of the stock, refer to last month. If it is remembered that an animal which begins the winter in good condition, is kept so more easily and cheaply, and will come out better in the spring, than one which begins it in poor order, and if this rule is acted upon, few mistakes will occur.

Salt should be given regularly; it is a very effective preventive of disease; but it should be given moderately. One ounce for a horse, ox, or cow, and one dram for a sheep or a pig, is a good daily allowance. It is only safe to trust to any animal's instinct to choose its own supply, when salt is kept constantly before it; otherwise, in its greediness, it will be apt to take too much. Taken in excessive quantities, salt is an acrid poison.

Lights in the barn should be carefully used. Nine-tenths of the fires which occur, are caused by carelessness. Never light a lamp in the barn. If many lights are used, have an outhouse, which stands by itself, kept expressly for the supply of oil, and the filling and trimming of the lamps, and let no light ever be used in it. Only a perfectly safe oil, that will not explode if the lamp or lantern is upset, should be used; and the oil should be kept in tin cans with a safe method of drawing it, by a tap, or one of the patent nozzles used by the best oil makers. A case of such cans or single cans of oil, can be procured of any dealer in the country who keeps Devoe's or Pratt's oils.

Rules for Health for animals, are very simple and plain, and need strict observance at this season. Observe perfect cleanliness in stable, yard, barn-yard, and all their surroundings; keep the skin clean; use only clean water for drinking; keep the body and the lodging places dry, and not too warm; let them breathe only pure air; eat only nutritious and digestible food, and not too much of that; keep them quiet, and do not suffer them to be irritated; avoid exposure to cold, wet storms, and if this can not be helped, dry the skin, using considerable friction, with a coarse cloth, then cover with a blanket, but not before, and give a warm drink as soon as possible after it. When the system is feverish from cold, give a saline cooling laxative.

Notes on Orchard and Garden Work.

To a large share of our readers November is the month in which the out-door labors of the year are brought to a close. These, and those also in a milder climate, will find occupation in caring for the products of their orchards and gardens. One of our most successful market gardeners says that he can teach any one to raise as good crops as he himself does, but he can not teach another how to convert the crops into money. In our Notes we have little to say about the selling of produce—and that, all will agree, is one of the important points. The marketing of fruits and vegetables will be so modified by one's locality and surroundings, that no general advice can be given. While it is better for one man to sell his apples, onions, carrots, or other crops as soon as harvested, another will find it more profitable to store his produce and sell it in small lots through the winter. These are matters which each must consider for himself—and they are of sufficient importance to demand a careful consideration. Another point about marketing—growers are too apt to overlook small markets near home, and to send their produce to the large cities where, though prices may rule higher, the expenses are much greater, and the net returns are likely to be less. Wherever mild weather prevails, much of the work suggested in the Notes for October, will be timely now, and these should be consulted.

Orchard and Nursery.

In advising fall planting, we have at the same time pointed out the conditions of climate and soil necessary to success. By no means plant trees where the ground is already partly frozen, or where it is likely to soon freeze for the winter. If trees are received, and the conditions are not favorable, it is better to heel them in, as directed last month. On the other hand, there are many localities in which trees may be advantageously set this month.

Young Trees, whether planted this fall or last spring, will be benefited by having the earth drawn to them, in the shape of a mound or cone, 12 to 18 inches high. The soil should be free from sods or litter, be compacted firmly to prevent washing by rains, and the surface made smooth. A mound of this kind will protect the trees from mice, and be of great service to those newly planted, in enabling them to resist the action of the wind.

Mice often greatly injure young trees; the mound above advised will protect them, except when the snow forms a covering under which they can work, and attack the tree above the mound. In this case, and with all trees small enough to be injured by them, the snow should be trampled down firmly after each fall. Of course it is trouble, but not near so much as to plaster and patch injured trees in the spring, and those who will not take the "trouble," should not plant fruit trees at all.

Rabbits are also to be guarded against. The old advice to shoot a rabbit, cut it open and rub the trees with the flesh, is good; it is founded upon the distaste of the rabbit for all animal food, but the end is accomplished in an easier manner. Where blood is obtainable, the trunks of the trees are spattered or smeared with it, by means of a swab made by tying a few corn husks to a stick. Some rub the trees with a piece of liver for the same purpose. Tarred paper tied around the trunk, or corn stalks, or pieces of lath set side by side, and bound on by a piece of annealed wire, are effective, but hardly so practicable when the trees are numerous.

Keeping Fruit.—The conditions required are a uniform temperature, as low as may be without freezing, and dryness. The cellar of the house should not be used for storing large quantities of fruit, if it can be avoided, and if used, there should be ample ventilation, to carry off the carbonic acid, given off by the fruit in ripening. The temperature of 35° to 40° is best, and when the thermometer shows above 40°, the outer air, if colder, should be admitted. Apples, properly picked and barreled, need not be disturbed until wanted for use or sale. Store pears in boxes or drawers, where they may be occasionally inspected, as they often ripen unevenly.

Cider of the best quality is usually made this month, as the low temperature allows the fermentation to go on very slowly.

Fences and Gates are to be looked to, and made all tight and snug for the winter.

Stocks for root-grafting should be taken up, and put in the cellar, either heeled-in with earth, or set in boxes, with the roots covered in the same manner,

Cions may be cut at any time after the leaves fall —the sooner the better. Label carefully, and preserve in a cool place in sand or sawdust.

Surface Drains should be made, to carry water away from nursery rows, from young orchards, or wherever pools of water show them to be needed.

Fruit Garden.

The care to be given currants, gooseberries, raspberries, and blackberries at this season, was mentioned last month. Cuttings of currants and gooseberries may still be put in, if the ground is open.

Blackberries and Raspberries multiply by suckers, which may be taken up, and set where they are to grow; but this is not rapid enough for nurserymen, who multiply them by root-cuttings, and though the plants thus raised are smaller, they are much better than suckers, as they have more abundant roots. Nurserymen grow them in large quantities in a regular cutting bench, with bottom heat, but the amateur and others, who need but a few, can raise them without artificial heat. The roots must be secured before the ground freezes. Take up the needed plants with all the roots belonging to them, and cut up all the roots, from the size of a lead-pencil, to half that size, or less—no matter how much larger—into pieces one to three inches long—the smaller, the longer. Have ready a box—such as a common soap-box—in the bottom of which are several inch holes, put some straw or moss on the bottom, then an inch or so of light sandy soil, or sand, put on a layer of root cuttings, then a layer of soil or sand, another layer of cuttings, alternating until the box is full. Put on the cover, and bury the box in a dry place, where water will not stand, below the reach of frost; see that the box is well covered, and the earth rounded off, and it will be well to lay over some old boards, to keep off excessive rains. When opened in the spring, the roots will be found callused, furnished with buds, and all ready to grow when planted out.

Pears in the fruit-room need frequent inspection. In our own experience all the earlier varieties have matured from a week to ten days earlier than usual; should this be the case with the later kinds also, great care will be needed. Extra fine specimens of Beurre d'Anjou, Beurre Clairgeau, and other showy varieties are sent to market in boxes containing a single layer of selected fruit, each specimen wrapped in soft white paper.

Grapes, to keep, must be of keeping kinds, and treated as directed last month. Those having small quantities, and no fruit house, can succeed fairly by placing them in a dry and cool cellar, or in a chamber that can be kept cool by opening the windows, and in which a little fire may be made, should there be danger of freezing the fruit.

Grape Vines.—The pruning should be finished up before cold weather comes, if possible. We can add nothing to the Notes of last month. Every one who would treat his vines properly, should have a work on the subject. The manner of growth being well understood, any intelligent person can prune his vines, each according to its needs. All the wood that is to be used for propagation, should not be allowed to dry, but be made at once into cuttings, and tied in bundles, which are to be covered with sand or light soil in a cold cellar.

Strawberries are to be covered when freezing weather sets in; it will do no harm to wait until the surface is frozen. Straw and salt-hay are the best materials, corn-stalks or leaves will answer.

Kitchen and Market Garden.

Should the present be a mild month, nearly all of October's Notes will be seasonable now, and we avoid repetition by referring to them. We especially commend, with emphasis, that portion of the general introduction under "Notes on Orchard and Garden Work," that refers to doing *spring work*—or that which is generally and worse than uselessly left until spring—*now*.

Parsnips, *Horseradish*, *Salsify*, and *Scorzonera*, being perfectly hardy, and mostly improved by freezing, are usually in part left in the ground until spring. Sometimes they may be dug during a mild spell in winter, but it is not safe to trust to the occurrence of this, and enough for family use during the winter, should be taken up before the ground freezes. If a digging can be made during the winter, then those lifted now will, except the horseradish, be acceptable to the cow. See what was said last month of the preservation of

Roots in Pits, and on keeping those for daily use. On a farm where there is a root-cellar, there is but little trouble with the roots for the kitchen.

Asparagus Beds.—Though the plant is perfectly hardy, it will come earlier and stronger if the bed is well covered; this is not practised in field culture, but in the kitchen garden it is well to put on four inches or more of coarse, littery manure.

Rhubarb.—If the ground is still open, and new plantations are desired, it is better to make them now than in the spring, as it starts so early that the buds may be injured if left until then. Set 3 or 4 feet apart each way, according to the variety, and give each root an abundance of manure at setting. If it is desired to force rhubarb for winter or very early spring, the roots must be taken up before the ground freezes. Keep in a box of earth until it is desired to start them. Put a root in the bottom of a barrel, with earth enough to cover it, and place in a cellar where there is a furnace, or in a corner of the kitchen, and stalks will soon push. Those who have greenhouses may force them under the stages. Do not at any time allow the roots to get dry.

Spinach in the climate of New York is oftener injured than helped by covering, as so much is put on as to cause decay. Still we prefer to cover, taking care that the straw or marsh hay is very thin over the plants. It should not be covered until next month in this latitude.

Cabbages should be left as late as may be, without being exposed to very heavy "black frosts." No better mode of keeping is known than the rough one of laying them head down, and merely covering the leaves with earth. On the large scale they are put down in beds 8 feet wide, and as long as convenient, the soil turned to them with a plow, and the covering finished with a spade. For family use they may be set in a trench, the stems being covered with earth, the heads covered with straw or leaves, and later, old boards put over to shed the rain. All covering should be kept off until real freezing weather is at hand.

Soft Cabbages, or those that have imperfectly headed, may be utilized by a little trouble, and be very acceptable next spring. A trench is dug, of convenient width, and deep enough to hold the cabbages when set out in it, so that their heads will be below the surface of the ground. Some of the top soil is thrown into the trench, and the soft heads set in this as close as they will stand. The trench is covered with boards, arranged to shed rain, and over this a covering of litter. The ends are kept open for ventilation, until really cold weather, when they are covered, and earth put on over the whole. We have seen cabbages, soft and worthless when put in, come out of the trench hard, crisp, and well flavored as could be desired.

Celery, after being banked up with earth to its full hight, may be left there if covered with sufficient leaves or litter to keep it from frost. But it is usually placed in trenches 8 or 10 inches wide, and as deep as the plants require. The celery is set in as close as it will stand, and when cold weather comes, it is gradually covered with leaves or litter, until the covering is 6 or 8 inches thick. We find that laying boards over this, makes it more convenient to get at the celery in winter. For immediate use, or in small quantities for families, it may be placed in narrow boxes, not over 10 inches wide, and a little lower than the celery, and as long as desirable. A few inches of sand or earth are placed on the bottom of the box, and the celery stacked in it, the same as in trenches. The boxes should be in a cool cellar, for in a warm one growth will start, and the stalks become hollow.

Cold-Frames.—With novices the trouble is that they suppose cold-frames are for *growing* plants, while they are intended to keep them perfectly dormant all winter. There is more danger of killing by too much coddling, than of killing by freezing. In the climate of New York, they rarely require sashes at night until the end of the month, and none at all in the day time. If started into growth, they will be very sure to be injured by severe cold. When the thermometer is at 30° outside, the sashes are to be removed altogether, and even when as low as at 10° or 15°, the plants must be aired by tilting the sash at the upper end.

Flower Garden and Lawn.

The work here, as elsewhere, will be preparation for winter, and nearly all the most important matters are referred to in last month's Notes.

Keeping is a very comprehensive term, and includes whatever is needed for the neatness and good order of the grounds. In our mild autumns, especially when the snow holds off, the lawn and ornamental grounds generally, may be kept in an enjoyable condition. Even in absence of flowers, there should be an attractive variety of

Evergreens, in which there is not only a pleasing diversity of form, but of color, and these should be planted with reference to their winter effect. Between the dark green of the Yews, and the light color of *Retinispora plumosa aurea*, are intermediate shades that may be contrasted with excellent effect.

Bedding with Evergreens, as practised by Prof. Sargent, is described in "Notes from the Pines," (on page 430). This may be modified by those who will take the trouble, in a very pleasing manner, by keeping a set of evergreens in pots—subjects from a foot to four or five feet high. These are to be kept plunged during the summer, where they will be watered, if needed, and when a conspicuous bed on the lawn is cleared of its summer bedding stuff, it may be filled with these potted evergreens, and be a most attractive decoration, especially if placed in view from the windows of the living room. We have often referred to the

Golden Retinispora, or *Retinispora plumosa aurea*, which is an excellent plant for bedding effects. It may be grown from cuttings with the greatest ease —only give it time—adapts itself readily to pot culture, and whether as an edging less than a foot high, or a well formed plant of six or more feet, is simply charming. Its yellow is not so bright in winter, as in spring, but still of a sufficiently yellow color, to warrant the name "golden." Young Hemlocks, and the dwarf forms of Norway Spruce are cheap kinds that may be easily managed in pots.

Leaves should be raked up from the lawn, as besides their littery appearance, they are too valuable to be scattered by the wind, and carried perhaps to the public road, or to a neighbor's grounds. A good gardener can never have too many leaves.

Winter Protection is often overdone. We see now but little of the old bundling of half-hardy shrubs in an envelope of straw, put on as compactly, and wound around as tightly, as if the plant was to cross the ocean. Evergreen boughs, stuck around the plants, or in the absence of these, common pea brush, with marsh-hay worked in among it, will generally give sufficient protection, and avoid the loss from smothering that attends close covering.

Leaves or Litter may be put over the roots of plants of doubtful hardiness, and if leaves are used, they may be kept from blowing away by a mere sprinkling of earth.

Tender Bulbs and Roots should all be in a place of safety, and half-hardy plants lifted and placed in pots or boxes, to be put in winter quarters.

A Cellar, Pit, or Cave, one or the other, will serve in the place of a greenhouse for many plants used for summer decoration. The cellar should be only so warm as to avoid freezing, and if a pit is used, it should have ample drainage. We have seen an artificial cave, made in a hill side, answer admirably for wintering such plants as were to be kept in a dormant state and protected from frost.

Greenhouse and Window Plants.

Whole pages might be written on the management of greenhouse plants, and our limits allow us only to hint at the essential points needed to be observed by those who manage their own small greenhouse, or a few plants in the windows. One who has a greenhouse should have some standard work, such as Henderson's "Practical Floriculture," to aid him in the treatment of particular plants. Whether in the greenhouse or in the window, there should be a

Gradual Transition from free air to artificial heat, and all sudden changes avoided. Generally this month, while personal comfort requires a fire in the room, the plants do not need it, and it will be all the better if they can be kept at the window of a room without a fire, and where air can be given freely. While all should be ready to give fire-heat when needed, the plants in the greenhouse should be kept without it so long as it is safe to do so; by closing the house early in the afternoon, the temperature may be kept from going too low at night.

House Plants.—Dust, insects, dry air, and overwatering, are the principal difficulties they have to contend with. By arranging some light covering to put over them while the room is being swept, and an occasional syringing in the bath-tub, kitchen sink, or elsewhere, supplemented by sponging the leaves of all smooth-leaved plants, this great enemy to plant health may be kept under.

Insects may be mainly kept off by hand-picking and a brush; if needed, apply tobacco water, or arrange a box or barrel in which they may be thoroughly fumigated with tobacco smoke.

Dry Air can only be overcome by providing on the stove, or in the furnace, for the abundant evaporation of water. There are but few days in winter when fresh air from without may not be let into the room, for a while at midday, but a cold current should never fall directly upon the plants.

Over-watering kills more plants than dryness. Pots in the house, especially the handsome glazed ones, should be provided with abundant drainage—broken pots, cinders, oyster-shells, anything to make an open layer at the bottom; then a layer of moss, to keep the earth from washing down, and then a soil made so open by sand that it will always allow the water to pass through. With these precautions there is no danger, but where the surface of the soil is muddy an hour after watering, there is something wrong, and plants will not thrive.

Plants taken up from the garden, should have time to rest and recover, and need at first very little water. Those to be forced, such as Deutzia, Perennial Candy-tuft, and others, had better remain in a cool cellar or a pit until January.

Bulbs for forcing, if not already potted, should be put in at once, as they need to be kept dark and cool for 6 or 8 weeks to form roots and give a strong bloom.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Oct. 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	403,000	4,118,000	3,419,000	329,000	974,000	1,107,000
27 d's *last* m'th	315,000	3,104,000	3,763,000	201,000	107,000	1,214,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	441,000	5,913,000	4,851,000	437,000	353,000	1,329,000
27 d's *last* m'th	369,000	5,476,000	5,649,000	374,000	91,000	1,349,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1877..	403,000	4,118,000	3,419,000	329,000	974,000	1,107,000
26 days 1876..	327,000	2,211,000	3,714,000	185,000	384,000	1,503,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1877..	441,000	5,913,000	4,851,000	437,000	353,000	1,329,000
26 days 1876..	359,000	2,189,000	3,821,000	167,000	178,000	1,419,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Oct. 8, 1877..	288,698	2,975,828	28,526	69,046	881,326	370,166
Sept 10, 1877..	247,803	2,049,885	37,201	24,409	723,478	359,181
Aug. 6, 1877..	162,325	320,094	22,615	11,595	576,090	252,869
May 7, 1877..	761,686	468,809	193,046	174,375	347,881	291,654
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,283	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,438

4. *Exports from New York. Jan. 1. to Oct. 10.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1877.	1,005,215	10,620,802	18,982,240	1,632,309	[illegible]	156,940	190,792
1876.	1,517,090	20,121,369	14,245,477	816,474	39,392	460,481	470,830
1875.	1,442,211	20,631,499	10,760,680	154,510	225	104,323	240,832

5. *Tide-water Receipts at Albany, from opening of navigation to Oct. 8th:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
1877..	7,700	4,021,800	18,342,400	709,200	839,300	2,309,800	518,300
1876..	19,800	8,690,100	7,775,700	491,100	396,600	2,231,400	560,600
1875..	77,600	13,459,200	6,668,300	102,000	551,400	1,365,200	596,300

Gold has been up to 104, and down to 102⅜@102½ on Oct. 9, closing Oct. 12, at 103, as against 103⅜ on Sept. 12; 105¼ on Aug. 11; 105⅜ on July 12; 104⅞ on June 12; 107¼ on May 12; 105⅞ on April 12; 104⅝ on March 12; 106 on January 12; and 111½ on the 14th of August, 1876. ....The business in Breadstuffs has been quite brisk, during the month under review, and values, on the whole, have been very well supported, all the circumstances considered, especially in view of the freer arrivals from the interior, and the depression in gold. The export movement has been on a more liberal scale, in Flour, Wheat, and Corn, particularly in Flour and Wheat; and has been fair also in Rye. Barley and Oats have likewise been in request for shipment to Europe. Barley, mostly of Canada product, for the English market; and Oats for England and France. Manipulations of the Wheat market, in connection with September and October contracts, especially for New York No. 2 Red, in the interest of speculative operators, seriously impeded legitimate trading. At the extreme close, the advantage as to prices was rather in favor of purchasers....Cotton has been more freely dealt in, and has been quoted dearer, though leaving off somewhat weaker....Provisions attracted more attention, for home use and export, at stronger but irregular prices....Hay, Hops, and Seeds, have been selling more freely, but at lower rates, seed values showing unusual depression. Important shipments of Hops have been made to England on consignment, for account of producers, chiefly from New York State, with the hope of realizing more satisfactory prices abroad than can be obtained in the home market.... Wool has been more sought after, and has shown more firmness....Tobacco has been in fair request at steady figures....Naval Stores and Petroleum weaker, on a slower movement... Groceries less active; Coffee cheaper; Sugar and Teas firmer, and Molasses higher....Ocean freights have been fairly active, and higher generally, though closing easier....Grain rates by steam to Liverpool closed on the 12th of Oct. at 9@9½*d.*; to Glasgow at 8½@9*d.*; to London at 8½@9*d.*; to Liverpool, by sail, 8½*d.*; London, by sail, 8½*d.*, per bushel. Flour to Liverpool, by steam, 3*s.* 3*d.*, @ 3*s.* 6*d.*; London, by sail, 2*s.* 9*d.*, and by steam 3*s.*; Bristol, by steam, 3*s.* 6*d.* per bbl. Provisions by steam to Liverpool, 35*s.* @ 45*s.* per ton; Cotton by sail ¼*d.*, and steam at ¼ @ 5/16*d.* ℔ lb. Grain, by sail, for Cork and orders, at 6*s.* 9*d.* @ 7*s.* 1½*d.*, and to Continental ports, 7*s.* @ 7*s.* 3*d.*; Italian ports, 6*s.* 9*d.* @ 6*s.* 10½*d.* per quarter.

Current Wholesale Prices.

	Sept. 12.		Oct. 12.	
Price of Gold	103 3-8		103	
Flour—Super to Extra State	$4 85	@ 6 35	$5 15	@ 6 35
Super to Extra Southern....	4 90	@ 8 75	5 15	@ 8 75
Extra Western..............	5 60	@10 00	5 75	@10 00
Extra Genesee..............	6 25	@ 7 75	6 35	@ 7 75
Superfine Western..........	4 85	@ 5 50	5 15	@ 5 65
Rye Flour..............	3 75	@ 4 75	3 75	@ 4 65
Corn-Meal..............	2 65	@ 3 50	2 60	@ 3 50
Wheat—All kinds of White.	1 38	@ 1 58	1 40	@ 1 58
All kinds of Red and Amber.	1 10	@ 1 48	1 15	@ 1 50
Corn—Yellow	59	@ 62	60	@ —
Mixed	53	@ 59½	58	@ 60
White......................	60	@ 65	65	@ 68
Oats—Western	31	@ 44	31	@ 42
State	35	@ 44	35	@ 44
Rye	68	@ 85	68	@ 80
Barley	70	@ 1 05	70	@ 95
Barley Malt............	75	@ 1 30	75	@ 1 25
Hay—Bale, ℔ 100 lbs....	60	@ 95	40	@ 85
Straw, ℔ 100 lbs.......	40	@ 65	35	@ 65
Cotton—Middlings, ℔ lb....	11⅛@	11⅜	11½@	11⅝
Hops—Crop of 1877, ℔ lb......	10	@ 15	8	@ 13
" old, ℔ lb............	2	@ 9	2	@ 7
Feathers—Live Geese, ℔ lb.	38	@ 48	40	@ 50
Seed—Clover, ℔ lb	9¾@	10¼	8½@	8¾
Timothy, ℔ bushel..........	1 50	@ 1 55	1 40	@ —
Flax, ℔ bushel.............	1 50	@ —	1 40	@ 1 45
Sugar—Refi'g & Grocery ℔ lb	7¼@	9⅝	7½@	9⅝
Molasses, Cuba, ℔ gal. 50 test	33	@ —	—	@ 38
New Orleans, new crop, ℔ gal	37	@ 50	40	@ 56
Coffee—Rio (Gold)..........	16½@	20⅜	16	@ 20
Tobacco, Kentucky, &c., ℔ lb.	5	@ 15	4½@	15
Seed Leaf, ℔ lb	4½@	50	4½@	50
Wool—Domestic Fleece, ℔ lb	28	@ 53	28	@ 55
Domestic, pulled, ℔ lb........	30	@ 37½	30	@ 38
California, spring clip,.......	13	@ 30	13	@ 31
California fall clip...........	10	@ 23	10	@ 25
Tallow, ℔ lb	8	@ 8¼	7¾@	7⅞
Oil-Cake—℔ ton	33 50	@ —	33 00	@33 50
Pork—Mess, ℔ barrel........	13 40	@13 50	14 35	@14 45
Extra Prime, ℔ barrel.	10 00	@10 50	10 00	@10 50
Beef—Extra mess..........	Nominal.		13 00	@14 00
Lard, in trcs. & bbls, ℔ 100 lb	7 50	@10 00	7 00	@ 9 75
Butter—State, ℔ lb..........	14	@ 27	15	@ 35
Western, poor to fancy, ℔ lb.	12	@ 27	14	@ 35
Cheese..................	5	@ 13¼	5	@ 13¾
Beans—℔ bushel............	2 00	@ 3 50	1 70	@ 2 75
Peas—Canada, in bond, ℔ bu.	—	@ —	85	@ 86
green, ℔ bush.......	—	@ 1 50	1 30	@ 1 40
Eggs—Fresh, ℔ dozen	18	@ 21	19	@ 22½
Poultry—Fowls & Chickens	11	@ 17	10	@ 13
Turkeys—℔ lb...............	13	@ 20	12	@ 17
Geese, ℔ pair..................	1 50	@ 2 00	1 00	@ 2 00
Ducks, ℔ pair..................	50	@ 1 00	50	@ 90
Roosters, ℔ lb..................	8	@ 12	6	@ 9
Ducks, Wild, ℔ pair..........	25	@ 60	25	@ 75
Grouse, ℔ pair...............	75	@ 80	80	@ 90
Partridge, ℔ pair...........	75	@ 1 00	40	@ 75
Plover, ℔ doz.............	1 37	@ 1 62½	1 00	@ 1 25
Snipe, per doz.............	40	@ 1 50	30	@ 1 25
Woodcock, ℔ pair	90	@ 1 15	60	@ 70
Venison, ℔ lb.	—	@ —	15	@ 20
Turnips ℔ bbl................	40	@ 50	60	@ 75
" ℔ 100 bunches.........	1 50	@ 2 50	—	@ —
Cabbages—℔ 100	1 00	@ 2 50	1 00	@ 2 25
Onions—new, ℔ bbl..........	1 00	@ 2 25	1 00	@ 1 50
Lettuce, ℔ bbl..............	37	@ 50	50	@ 1 00
Carrots, ℔ 100 bunches......	1 00	@ 1 25	1 00	@ —
Potatoes—new, ℔ bbl.......	1 00	@ 1 75	1 25	@ 2 00
Sweet Potatoes—℔ bbl.....	2 75	@ 3 50	1 75	@ 2 25
Tomatoes, new, per box.....	20	@ 25	20	@ 30
Beets, ℔ 100 bunches.......	1 00	@ 1 25	1 00	@ —
String Beans, ℔ bag........	25	@ 50	—	@ —
Cucumbers, ℔ bbl............	—	@ —	—	@ —
Broom-corn	4	@ 9	—	@ —
Lima Beans, ℔ bag..........	—	@ —	2 50	@ 2 75
Green Corn, ℔ 100...........	40	@ 50	40	@ 50
Egg Plants, ℔ bbl..........	—	@ —	65	@ 1 00
Peppers, ℔ bbl..............	1 00	@ 1 50	1 00	@ 1 50
Apples—℔ barrel............	1 50	@ 2 75	1 00	@ 2 75
Squash, ℔ bbl...............	50	@ 75	50	@ 1 00
Okra, ℔ 100................	—	@ —	15	@ 20
Peanuts, domestic, ℔ bush..	1 20	@ 1 50	1 15	@ 1 45
Melons, per 100..............	5 00	@20 00	—	@ —
Grapes, ℔ lb...............	2	@ 11	3	@ 10
Pears, ℔ bbl..............	1 50	@ 8 00	2 00	@ 7 00
Peaches, ℔ basket.........	50	@ 1 75	1 00	@ 2 00
Plums, ℔ bkt,.............	—	@ —	2 00	@ 3 00
Cranberries—℔ bbl........	—	@ —	5 00	@ 7 00
" ℔ bkt...............	—	@ —	1 00	@ 2 25

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Sept. 24..............	11,362	125	3,667	27,362	28,243
Oct. 1	11,316	95	2,975	24,136	21,186
Oct. 8................	9,153	78	2,872	31,688	24,809
Oct. 15	12,310	88	2,600	32,870	32,971
Total for 4 *Weeks*..	44,141	386	12,114	116,056	107,214
do. *for prev.* 5 *Weeks*	50,005	403	16,030	138,712	100,266
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week......	11,035	96	3,028	29,014	26,803
do. do. *last Month* ..	10,091	80	3,206	27,742	20,051
do. do. *prev's Month*.	8,908	61	3,562	23,178	15,698

Beeves.—The past month's business begun with a depressed market. Several serious failures of leading dealers adding to the bad feeling. For two weeks the receipts were large, and this helped the fall of prices until the lowest point since 1875 was reached. Choice cattle sold at 11½c. ℔ lb., and Texans at 6c., in the middle of the month. Lighter receipts, and a much better quality of stock, mended matters and stiffened the market, but prices could hardly be quoted higher, considering the extra good beeves offered. The foreign shipments during the month have largely increased over any previous month's business. It is easily seen how the list of shipments appears as a barometer of the market, increasing rapidly with lower prices. The market closed very weak. extra cattle selling at 12c.; good fat steers at 11@11½c.; ordinary to medium at 9½@10c., and poor Texans at 7½@8½c. per lb., a decline of ½c. per lb. in the last week.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Sept. 24...........	8¾@13 c.	9½@10½c.	10 c.
Oct. 1...........	6 @12¼c.	7½@12¾c.	9¼c.
Oct. 8...........	7½@12¾c.	9 @11½c.	9¾c.
Oct. 15..........	7¾@12½c.	8 @11 c.	10 c.

Cows.—The demand for extra good cows fit for beef when done milking, has lifted prices up a point or two. Extra large cows and good milkers, are worth $3 to $5 a head more than last month; the best cows selling for $75, and poor ones for $40 to $60....**Calves** have done well throughout the month; the receipts are getting lighter, and most of them are grassers. The closing prices are 3@3¼c. ℔ lb. for grass calves, and 8¼c. ℔ lb. for good veals....**Sheep and Lambs.**—The business in this stock has been active, and prices have advanced a little, notwithstanding the large arrivals. Prices stood at the close of the month at 6c. ℔ lb. for extra sheep, 5¼c. ℔ lb. for fair, and 4½c. ℔ lb. for thin and poor. The best lambs brought 6c. ℔ lb....**Swine** have been weak, steady, and strong at intervals, gradually bettering through the month. At the last the tendency was again towards weakness; the market closing on the 15th Oct. with sales of live at 5¼c. ℔ lb., and of city dressed at 6¾c. ℔ lb. Jersey market pigs have begun to arrive, and have sold at 8c. ℔ lb., dressed.

Prices of Feed.

Bran, per ton..........................	$18.00@$20.00
Middlings, per ton.....................	19.00@ 21.00
Ground Feed, per ton...................	15.00@ 21.00
Linseed-oil-cake, western, per ton.....	44.00@ 47.00
Cotton-seed-cake, per ton..............	25.50@ 40.00
Chandler's Scraps, per lb..............	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton..	$56.50
do. do. Lobos, do. do. do.....	47.50
do. do. guaranteed, ℔ ton, cargo C	57.50
do do. rectified, per ton, 10 p. c..	70.50
do. do. do. do. 3.40 p. c.	52.50
Excelsior Fertilizer Works, Fine Ground Raw Bone,...	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Wheat and Grass Manure, ℔ 1,000 lbs.,	27.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal .....per ton.	42.00
do. do. do. extra fine.... do.	40.00
do. do. do. fine.......... do.	38.00
do. do. do. medium...... do.	36.00
do. do. do. medium do.	37.00
do. Dissolved Bone, 15 per cent........ do.	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.00
" " Dry g'd Fish Guano, ton 9 p. c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
" Rye do do do	11.00
" Wheat do do do	16.00
Bowker's Hill and Drill Fertilizer, per ton........	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton..........	7.00@8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (actual potash 44 per cent) per lb....	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$20.00
Muriate of Potash (actual potash 50 per cent), per lb...	2½c.
Nitrate of Soda, per lb............................	4½c.@ 5 c.
Sulphate of Ammonia (25 per cent.), per lb....	5 c.@ 5½c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$50

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Hog Packing in the West.—The number of hogs packed since March 1 to dates mentioned are estimated as follows, at the places named:

	1877.	1876.
Cincinnati, September 26........	122,400	92,200
Chicago, September 26................	1,200,000	1,005,000
Indianapolis, September 26...........	175,000	221,000
Cedar Rapids, September 26...........	95,500	81,800
Kansas City, September 18............	66.157	12,630
Cleveland, September 22	122.642	145,408
Other places approximately......	273,301	191,962
Total............................	2.055,000	1,750.000

This shows an increase of 305,000 hogs in the periods mentioned. The monthly extreme range of prices at Chicago for 1877 and 1876, from Jan. to Sept., are:

	1877			1876		
	Ex. Range.		*Gen. Av.*	*Ex. Range.*		*Gen. Av.*
January.....	$5.90	@6.87½	$6.28	$6.84	@7.44	$7.20
February	5.47	6.57	5.86	7.50	8.50	7.88
March.......	5.00	5.77	5.31⅛	7.65	9.09	8 10
April........	5.15	5.74½	5.37	7.48	8.50	7.87
May.........	4.95½	5.05	5.20	6.57	7.30	5 90
June.........	4.49	5.03½	4.71	5.71	6.21	6.03½
July.........	4.73	5.03	4.94½	6.11	6.68	6.47
August.......	4.61	6.29	5.10	5.82	6.47	6.29¾
September ..	4.92	5.69½	5.33¾	5.52	6.27½	5.97

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Boat for Six Persons.—"C. E. C.," New York. For a plan of a stout boat that will hold six or eight persons, and that may either be rowed or sailed, see the *American Agriculturist* for March, 1876.

Extra Numbers Free.

ALL new Subscribers now received for 1878, are entered at once on the mail books, to receive the paper up to the end of 1878 for one years' subscription price. We print a lot of extra copies of this **November Number,** and for the first 8 or 10 days of the month will forward one of these to new names received, if the extra copies hold out so long. After these are exhausted, or after November 10, new subscribers for 1878 received during November, will receive the December number free.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss..**Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time at the club rates, if new members begin at same date as original club.

The Premium List is now in full force, and will be continued some time. The Table of Prices and some explanations, will be found on page **441.** Eight extra pages of descriptions and illustrations, were give last month; copies of those pages will be mailed free to all applicants. Any one desiring, for examination, the whole October number, including the premium pages, etc., will be supplied with a copy, post-paid, for 10 cents.

The Illness of W. C. Flagg.—We regret to learn through correspondence from Alton, Ill., that the Hon. W. C. Flagg, of Moro, Ill., was (early in October) seriously and even dangerously sick. We speak the wishes not only of all the agriculturists and horticulturists of his own State, but of those of the whole country, when we say that we hope that the fears of his friends are not well founded. and that he may soon be restored to health and usefulness.

Pure Ground Bone.—The Excelsior Fertilizer Works, Salem, O., send a sample of one of their products, their "Premium, Pure, Odorless, Fine Ground, Raw Bone." A rather long name, but one which the makers say is all required in order to describe the article. It is certainly "fine" and "odorless," and a rather careful examination with the microscope failed to discover any particles that were not bone, and we do not doubt its value as a fertilizer.

Large Shipments of Farm Produce.—Whole fleets of large steamships are departing every week loaded down with American farm produce. Sometimes 500,000 bushels of wheat go on a Saturday. The steamship "England," of the National Line, alone took 65,000 bushels of wheat on October 8, equal to 3,900,000 lbs., or nearly 2,000 tons! The eight Steamers on that day carried 263.000 bushels of wheat (15,780.000 lbs.); 9,150 barrels of flour (1,830.000 lbs.); 8.000 bushels of corn; 32,000 bushels of rye; 3,850 bales of cotton (1.925,000 lbs.); 2,465 boxes of bacon; 21.000 boxes of cheese; 4,500 packages of butter; 1,450 tierces of lard;

about 200,000 lbs. clover seed; 4,500 *cases* of Canned Meats; 1,530 bales of hops; about half a million pounds of fresh beef in quarters; besides large quantities of tobacco, apples, tallow, salted pork and beef, oil cake, cotton seed oil, starch, 1,200 bags of ivory nuts, 477 slabs of rubber, grass seed, etc., etc. The above, a single day's shipment, will give a pleasant exercise for the youngster in arithmetic, to figure up the pounds, tons, and value in dollars at the fair home price in any locality. The following are approximate weights: Box of Bacon, 300 lbs.; Box of Cheese, 40 lbs.; Tierce of Lard, 300 lbs.; Package of Butter, 100 lbs.; Bag of Clover Seed, 120 lbs.; Case of Canned Meats, 48 lbs., (2 dozen 2 lb. cans); Hogshead of Tobacco, 750 lbs.; Tierce of Beef, 350 lbs.; Barrel of Pork, 200 lbs. By and by we shall get the official figures for these autumn months; they will show our estimate last month of $500,000,000 received from abroad for our surplus farm produce this year, to be under the truth.

P. S.—Export in 10½ months, 1877: Fresh Beef, 86,132,730 lbs., value $8,960,388. Same time, 1876, 19,990,895 lbs., value $1,755,191. Live Cattle, 1877, 19,250; value $2,450,350. Fresh Mutton, 1,883,850 lbs; value $123,900. Live Sheep, 12,400, value $81,350. Total value of live and dressed beeves and sheep exported Jan. 1 to Oct. 13, 1877, **$11,460,320,** against $1,755,191 in 1876.

Butter Factory.—"W. L.," Waterloo, P. of Q. It would require more space than we have to spare to give full descriptions of a butter factory. Much information, with illustrations, is given in the *American Agriculturist* for May, 1874, which would be found useful by one proposing to build a factory. In Willard's Dairy Husbandry (price $3.00), there are many plans of factories, and the whole business is described in detail.

The Use of Incubators.—"W. L. M.," Wilmington, N. C. Incubators are now attracting much attention, and the season is coming on when they can be most profitably used. It must not be supposed that these machines can be used with the same facility as a clock which needs winding up once a day, and will then run alone. On the contrary, an egg is such a delicately organized embryo that the utmost care must be exercised in regulating the heat of the incubator, else it is destroyed by a slight excess one way or the other. A difference of two degrees either way if long maintained is sufficient to kill the eggs, or to produce such weakly chicks that they die soon after being hatched. To use any incubator with success, one needs to exercise tact, judgment, constant attention, patience under probable failure at first, and great care in selecting eggs. Then with the right kind of incubator one may generally succeed in hatching chicks. An incubator with an automatic regulator of the heat, and with a steady source of heat would be preferred by some. The cheapest one is that which uses horse manure; this necessarily requires an experience as to the behavior of fermenting manure under different circumstances.

Cool Setting of Milk.—"A. D. S.," Montgomery Co., Pa. The newly discovered process of setting milk at a very low temperature, is working very well. The milk is kept in closely covered, deep cans, at as low a temperature as possible, so that it will not freeze; 45 degrees is a very favorable temperature for raising the cream in the shortest time. This may easily be procured by using ice. In the Cooley System the cans are submerged in water, and the water is cooled down to 45 degrees, or as near to it as may be practicable by means of ice. The cooler is then closed and this temperature is maintained for a considerable time without any further attention. With a cool running spring no ice is needed.

Trial of Agricultural Engines at Syracuse.—A most interesting exhibition and trial of agricultural steam engines, is to be held at Syracuse, on Nov. 12th, under the management of the N. Y. State Agricultural Society. The Society offers a large gold medal for the best engine in each class—under six-horse, and over six-horse-power—and a silver medal for the second best in each class. These trials of engines, will be very well worth the attention of those persons who are using them, or who expect to do so, and it is to be hoped that many will be present.

The Colorado Mountaineer, published at Colorado Springs, Col., by Marsh & Adams, is a wide-awake, well edited, and beautifully printed paper, giving a good deal of information in reference to that enterprising new State.

Alpine Flowers for English Gardens, by William Robinson, Editor of "The Garden." This is a new edition, enlarged by new matter and illustrations, of that which was before the most thorough work on its subject. It treats very fully of rock-work, showing by both example and warning, the proper and improper construction of the rock-garden, and is indispensable to one who would undertake the culture of Alpine plants here or elsewhere.

The Sportsman's Gazetteer, by Charles Hallock, Editor of "Forest & Stream," and published by the Forest & Stream Company. A thick 12 mo. of about 900 pages. It gives descriptions of all the North American quadrupeds, birds, and fishes, regarded as "game," treats upon dogs, boats, wood-craft, and other matters useful to the sportsman, and has a very complete directory, accompanied by maps, of the principal game resorts in all parts of the country. Sent by Orange Judd Company by mail for $3.

Treatment for Ringbone.—"B. A.," Linn Co., Iowa. This disease, which consists of inflammation of the membrane covering the bones of the pastern joint, followed by a deposit of bony matter, which in time causes the bones to unite and make a stiff joint, requires different treatment in young horses from that necessary with old ones. Young horses frequently recover quickly, while old ones are sometimes treated without effect. The proper course consists of rest and cooling applications until the inflammation is subdued; then apply a blister, such as 20 grains each corrosive sublimate and camphor, 10 drops of hydrochloric acid, and one ounce of turpentine. Watch the blister, and wash off when the effect is sufficient.

Cleanliness in the Poultry House.—"H. B.," New London, Conn. When cleaning the perches in the poultry house, it is necessary to apply the mixture of kerosene oil and grease to the underside as well as the top. This is often neglected, and the lice gather there. Everything about poultry management should be thoroughly done, to avoid failure.

Game Laws of Pennsylvania.—We have a copy of the digest of the game laws of Pennsylvania, compiled by Chas. E. Scott, of Bristol, Pa., which should be read by all persons disposed to preserve valuable wild animals from extermination, as well as by those who are unlawfully engaged in such destruction, that they may be warned of what the laws require.

Concrete Houses.—"A. E. W.," Charlotte Co., Va. In the *American Agriculturist* for December, 1874, there was given an illustrated article, fully describing the mode of constructing concrete houses. This kind of house is cheaper, more durable, dryer, and warmer than one of either wood or brick.

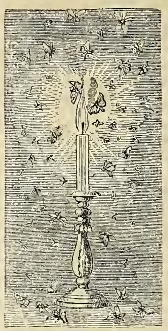
A Sick Hog.—"E. B.," Adams Co., Ohio. Vomiting is a symptom of the disease generally called "hog cholera," but properly typhoid or bilious fever. It is useless to treat a hog for this disease, as medicines very rarely have any effect. Every one who owns even one hog, would receive more than the money worth by the investment of $1.75 in Coburn's "Swine Husbandry," if he would read it and follow the plain advice there given for the healthful treatment of his animal.

Borrowing to Buy a Farm.—"P.," La Porte, Ind. We advise no one to borrow money to buy a farm. The efforts to repay borrowed money are now overwhelming thousands of farmers in trouble and anxiety, and hundreds are losing all they have in vain attempts to pay exorbitant interest. Keep out of debt. A man in debt is poorer than one who has nothing.

The Microscope.—Practical Hints on its Selection and Use, by John Phin. The second edition of Prof. Phin's work is enlarged and much improved over the first by abundant illustrations. This is much better adapted to the use of beginners than the more elaborate English works, as it describes American instruments and appliances. Its elementary style and full and plain descriptions make it the best hand-book on the microscope for the novice that we have seen. Sent from this office post paid for 75 cents.

Sending Postage Stamps.—It is interesting, and also gratifying, to see one's suggestions adopted, and in practice over a wide extent of country. In July last we showed the inconveniences attending the usual method of sticking the stamp to a letter, when sent for return postage, and showed how it could be readily secured by passing it under a band made by cutting two slits in the paper. Since then a large share of the stamps received by us are thus treated, much to the gratification of those who open the letters. Formerly it often took more time than a stamp was worth, to detach it without so defacing it that it would be useless, but the method of holding it in a slit, saves trouble and vexation of spirit, and what is often of great consequence with us—saves time.

Sundry Humbugs.



Our correspondence—which in the Humbug line is something immense—is as correct an indication of the state of the Humbug atmosphere, as is the barometer of the terrestrial atmosphere. When circulars of a particular scheme come in daily and regularly, we feel sure that those "running the machine" are making money. If they come in slowly, we know that their business is dull, but when their circulars show a "change of base," and that the projectors are trying some new dodge—then we know "the jig is up." These remarks have reference to that little game which has been played by persons calling themselves the "Finance Committee of the Louisville Lottery Co.," and whose circulars, informing thousands of people that each has drawn "a gold watch and chain, valued at $150," which can be had by applying to Russell & Co., of Bond street, N. Y., have been scattered far and wide—indeed we have so many of them that even at the present low price per pound for waste paper, they will add not a little to our "profit and loss" account. Russell & Co. claim to be only concerned in the matter so far as to deliver certain watches when certain terms are complied with, and our sympathies—such as they are—are with Russell & Co., for they must have been greatly astonished to find there was a total change of base, and been surprised to find that the circulars, making demands upon them, were no longer in behalf of

THE FINANCE COMMITTEE OF THE LOUISVILLE LOTTERY ASSOCIATION

—That name we had come to know, if not love, so well, but a kind of joint stock affair, a sort of general lumping of "all the Unclaimed and Forfeited Prizes in the various Legal Lotteries which have been drawn in the 'United States' for the past 10 years." The unclaimed doings of the Louisville thing, amounted to $94,000, while this new circular claims the amount for 23 Lotteries, to be only $122.944.00. Then (can the watches "valued" at $150 have "gi'n out"?), the "prizes" which Russell & Co. are to deliver, according to the new circulars, are generally, "A Lot of Gold Jewelry, (about 80 different patterns) valued at $—"—but the blank before us is not filled, and we shall never know what they are valued at, but the important blank after "the percentage due" is filled with $14.00, which we have no doubt Messrs. Russell & Co. will gladly receive.

80 JEWELRY THINGS FOR $14.00!

just 17½ cents a piece—who would not adorn themselves at this low rate? In the old flush times, it was said of the Attleborough jewellers, that they did not stop to count their wares, but turned them out by the peck. This lottery concern hasn't got to that, but "80 different patterns," oh! We are not yet informed how "Hetherington & Co" are mixed in this matter. Circulars are still issued using the name of Russell & Co., but the correspondence in reference to these same circulars, appears to be carried on by H. & Co., but those who let all such things severely alone, will not be bothered, as to who is who in the matter. The operators

CAME TO GRIEF IN POLK TOWNSHIP, OHIO.

Mr. J. W. Coulter being informed that he had drawn "a gold watch and chain valued at $150"—which he could have by paying $15—wrote to the parties to send the watch, C. O. D. subject to inspection. In a few days he was notified by Hetherington & Co. that the watch had been sent according to his order. Mr. C. went to the express office to examine the watch but was not allowed to do so. This would have baffled most persons, but Mr. Coulter went before a Justice of the Peace, put in a bill for attorney's fees, and got a writ of attachment on the package. The estimated value of the watch when examined was $4. At last accounts Mr. Coulter had a "gold watch and chain valued at $150," which he would sell somewhat under valuation.... The

"ROYAL DOMINION" LOTTERY,

called a "Gift Concert," was getting to be a nuisance such was the number of circulars, and all alike, but since the notice in our last, the matter has been taken up by our vigilant Postal authorities, with already perceptible effect. It appears that a number of the lottery swindlers, finding their business too much interfered with to be profitable, have left the States in disgust, and selected the "Dominion" as a safe point from which to load our mails with their illegal matter—a little game which our officials do not propose to allow. They should find some way of putting a stopper upon one Albert Friedham, of Hamburgh, Germany, who has somehow got hold of the names of respectable people in this country, whom he annoys with his lottery circulars... And now

LOTS OF ESTATES IN AUSTRALIA

are going a-begging, all for the want of heirs. So numerous are they, that one chap has a printed circular with a blank which he can fill with the name of "the late" so and so. Fortunately all the estates thus left are valued at an even "one-and-a-half millions of dollars," so this part does not need to be changed. This is the thinnest of the kind that we have seen.... Well, here is something that smacks of the Middle Ages, for it is

ALL ABOUT LOVE POWDERS,

which it seems there are fools yet to buy, and rascals who will sell. But the story as told in the "Buffalo Courier" is very prosaic. "Prof. Hayden" offered to sell "Love Powder" which would work "wonders upon female affections." We are left by this in very much the same state of doubt that the old lady was, about her indigo. "If it was good, it would sink or swim, and she couldn't tell which." Whether the "wonders upon female affections" were to be manifested by curing the most desperate cases of real old fashioned love—that kind we read about, or if it was to start up a glowing flame in ice-cold hearts, after the manner of Cupid and his "bellowses," as used to be pictured on the valentines—we can't say. A Mr. Randall received a letter describing the love powder as above, but instead of getting some of it, and experimenting, and telling us what it did, he in a very unpoetical way sent the "Professor's" letter to the post office authorities. They nabbed "Prof. Hayden," who turned out to be only Bill Kelly, who, not having $100 handy to pay his fine, went to jail, and we don't know any more about "Love Powders" than we did before.

MEDICAL MATTERS,

as cool weather comes on, are a little livelier. We reply to several that Adee's prescription or recipe, which he proposes to send "free by mail," is after the old style. We sent for it long ago, and found it to be of stuff not known in the shops—but he overcomes that slight difficulty by supplying it himself..... Morris Co., N. J., has recently been invaded by

TRAVELING EYE DOCTORS,

who profess to be from the "Eye and Ear Infirmary" in 13th street, New York. This is sufficient to stamp the fellows as frauds, for no proper infirmary, hospital, medical college, or "university," (were there such a thing), ever sends out "agents" to drive through the country and look up patients. They came across the wrong customer in one of our readers, who does not hesitate to designate those who called at his house "a couple of impostors," and says that "the eldest of these scamps is evidently an English subject about 50; the younger, less than half that age, probably an American." Our New Jersey friends should be on their guard. These chaps offer to effect certain cures for specified sums, and whoever does this is not to be trusted to treat a cat. Our correspondent is to be commended, he gives his story, signs his name, and then tells us to use all or any part of it, and does not add: "On no account publish my name or anything which will indicate who wrote this." Mr. Leach, we like people who are in earnest, and you are sound on medical matters.

AMERICA IS A GREAT COUNTRY,

the United States is only a small portion of it. We often, we Yankees, call ourselves "Americans," and our country America, as if there was not, let alone the strip running far to the south of us, north of the St. Lawrence a Dominion reaching all the way to the North Pole. We must, with whatever of reluctance and loss of national pride, admit that the Dominion of Canada is quite the equal of "the land of the free and the home of the brave"—in quacks and quackery. We have before us the "Herald of Health," it is published by W. H. Comstock "is his name," and Brockville "is his station." We have just a bit—"a "smudging"—of a certain kind of sort of respect for W. H., as there is nothing of the hypocrite about him—he is not impelled by "love to his fellow beings," or from a "sense of duty to humanity." W. H. says: "Self-interest is the spring of all human actions, and were I capable of acting above that motive, I should be more than human."—We are almost tempted to say "Billy, you're a brick," but in view of what follows we don't, but are forced to believe that William, you are a very bad plagairist, and have gone and stolen another man's thunder. Besides, we are not sure that "W." stands for William at all. Among other things, W. H. offers

MOUNTAIN HERB PILLS,

which are made of herbs which are herbs, because they have principles. If they would go for "principles, not men," it would be all the better for the men. The first principle goes for the blood, principle No. 2 gets after the skin, the third takes care of the lungs, the fourth gives its attention to the kidneys—but it is of no use to enumerate; we should say that these pills would be decidedly "sarching." Many years ago we knew an old darkey who did "doctorin' 'round" among his people. One day, in a ramble, we came across old Henry, who had cut a lot of barberry stems, and he was scraping the bark from them into two different papers; we asked the reason for this, and learned—though he used very different terms—that the bark scraped *up* would act as an emetic, while that scraped *down* would be a cathartic. We asked, "Henry, suppose you should scrape both ways, how would it act?" the "Yah! Yah!! Yah!!!" that followed, left us to imagine that the effect would be very "sarchin"—as much so as these "Herb Pills." If one wants something more radical than Herb Pills, W. H. offers Root Pills, and Indian Root Pills at that, or to be more precise

"DR. MORSE'S INDIAN ROOT PILLS,"

and if one don't believe they have "vartues," let him just read the pathetic "Short History of Dr. Morse's Father, Also Showing how this Wonderful Medicine was Brought into Use." Doctor Morse had a father. Dr. Morse's father had a son—that was Doctor Morse. Well, Doctor Morse's father sent his son off among the Indian tribes, who show much Indian-ooity in case of sickness, and he, the son, was to learn all about it. But Doctor Morse's son's father was very sick. "He had eight of the most celebrated doctors to attend him, night and day," from which we infer that he had a constitution second only to that "which must and shall be preserved." We pass by the really—in its place—wicked quack-medicine lie, about prayers "ascending to the Throne," and much more shameful talk. But when Doctor Morse's father was *in extremis*, and "every eye was bathed in tears, a rumbling noise was heard in the distance, like a mighty chariot——," thus far, reader, we have quoted from the "Herald of Health," published in Canada, about Doctor Morse's father, we now turn to the United States, and take up a nice little pamphlet published by A. J. White, in New York, where is given "A Short History of White's Father," and proceed—"winding its way nearer, when all at once a fine span of horses before a beautiful coach, stood before the door, out of which alighted a noble and elegant looking man." This elegant chap was of course Doctor Morse, who at once gave Doctor White's father some stuff, and then the fathers of Doctors Whorse and Morite both got well. The fact is we are getting things mixed—but if any one wants to know how Doct. White's father got well let them read the story of Doctor Morse's father, or if more interested in Doctor Morse's father, let them read the story of Doctor White's father, for they are both alike, and one is just as true as the other. It is only those who can swallow such stories, that swallow the miserable quack medicines that such fictions are used to sweeten.

Fall Plowing for Corn.—Heavy clay soils that have a good covering of clover or grass sod, may be plowed this month for a crop of corn next season. We would not plow the furrows flat, but set them on edge. In the spring a good harrowing, lengthwise of the furrow, will give a sufficient depth of mellow soil for planting, leaving the decomposed sod just where the young roots can reach it. A light application of artificial manure, before the harrowing in the spring, would be very beneficial. The planting should immediately follow the harrow, while the soil is fresh. Light or mucky lands had better be left until spring, as this treatment is not proper for them.

A Hamstrung Horse.—"H. B.," Killarney, La. The rupture or separation by cutting of the tendon of the heel of a horse, known as the tendon of Achilles, is incurable, except under the rarest combination of favorable circumstances, and then will almost surely result in a permanent retraction, which will cause the limb to be useless. If an effort is made to preserve the horse, the whole limb must be held rigidly motionless with bandages, and the wounded part dressed with cold water. It is barely possible that the severed tendon may unite in course of time, after prolonged rest.

Emigration to the South.—"B." Under present circumstances there seems to be not the slightest objection for a Northern man to go anywhere in the Southern States. If he has a desire to procure a farm there, there are now very favorable opportunities and any inducement to molest a Northern man, which may have existed in some localities, from just or unjust causes, no longer remains. There is one locality at least, where a thrifty colony is in course of formation. This is at Highlands, Macon Co., North Carolina, where Mr. T. S. Kelsey, formerly of New York, and some friends have settled. Mr. Kelsey writes that that part of the country offers many opportunities, such as cheap fertile land, and a very healthful, mild climate. There is ample room in many parts of the South for colonies of Northern men, who can procure homes at a very small expenditure of money.

Ladies and Children's Shoes can hardly be treated with the ordinary blacking used upon men's shoe-leather; indeed they are usually of a style that would be disfigured and injured by the usual "shine 'em up" of the boot-blacks. The article called French Dressing, made by B. F. Brown & Co., is prepared especially for delicate leather boots and shoes, to which it gives a fine finish, and it will make traveling bags and other articles of leather look as good as new. The Dressing is prepared by one of the long established Boston houses, and has been in satisfactory use for a number of years by several of our associates.

Wheat for Name.—"J. B.," Isabella Co., Mich. It is impossible to identify, with any certainty, a sample of wheat, unless the whole head is sent, and then it can only be a guess in many cases. Different soils and vigor of growth quite change the appearance of the same variety of wheat, and sometimes even change the color considerably. Thus a white wheat, grown on a rich, light, sandy or calcareous loam, will be light and bright, while on a damp, mucky soil, it may be nearly red.

White Specks in Butter.—"A Subscriber," Bay Ridge, Long Island. The white specks found in butter may be due to several causes. One is an acid condition of the milk, which causes a deposit of small curdy particles that are mixed with the cream, and when it is churned these can not be separated from the butter. Another is the presence of lime in the salt; this forms an insoluble soap with the butter, which exists in small nodules wherever there is a particle of lime. Another cause is the cow itself. Some cows always yield specky butter from some constitutional peculiarity. Again, it may be that the air of the milk-room is impure, and conveys some germs of decomposition into the milk, and produce this effect. A possible remedy, if the cause is acidity of the milk, is to put a teaspoonful of carbonate of soda in the cream pot, and stir it thoroughly.

The Best Pigs.—"J. H. S.," Northampton Co., Pa. We cannot say which are the best pigs for any person, without knowing exactly how he is situated. The best, as a family pig, if only one is kept, is probably a pure or grade Berkshire; for what are called market pigs, that is, pigs for small pork about 100 to 120 lbs., either Essex or Suffolk are best; for heavy pork the Berkshire, Poland China, or Yorkshires may be chosen, and one of these is about as good as another.

Manufacture of Tile for Conveying Water.—"S. W.," Placer Co., Cal. An article descriptive of the manufacture of drain-tile was given in the *American Agriculturist* for June, 1874. There are tile-machines made to be operated by horse or steam power. In using tiles for carrying water for irrigating purposes, there would be a great waste through the joints in consequence of the pressure of the head, unless the joints were made close. This could not be done with ordinary tiles. Common clay-tiles are also porous. The best thing to do, perhaps, would be to make cement pipes, as described in the *American Agriculturist* for Dec., 1872.

Produce of a Grade Jersey Cow.—"W. L. S.," Jersey Co., Ill., writes that he has a grade Jersey Cow, 2 years old, which, in 196 days milking, yielded 196¾ lbs. butter, besides raising a bull calf. The product realized ($15 for calf included) $63.68 cents; the cost of feed was $19.38, leaving $44.30 for a little more than 6 months keeping. The amount of milk was 3,302¾ lbs., an average of 22 lbs., or about 10 quarts daily.

Steamer for Cooking Feed.—"A. H.," Buffalo, N. Y. The Anderson steamer, made by Whitman & Burrel, Little Falls, N. Y., is a cheap, effective, portable steamer, and occupies little room. It is supplied with water, by a tank, which can be had with it.

A Sample of Oats has been sent by a correspondent at Quarryville, Pa., who says, from 1 bushel sown, 10 were harvested, and from these 10 bushels 105 were grown. This is such an insignificant yield, that we would not advise any more of them to be grown. There are plenty of oats which weigh 45 lbs. to the bushel, and on good soil will produce 20 to 25 bushels from one bushel of seed.

Land for Sale in Southern Wisconsin and Minnesota.—"W. E. B.," Williamsport. Southern Wisconsin has been settled for several years, and there is no Government land left there. But there is plenty of unoccupied land, that can be purchased for $10 an acre, upwards. In southern Minnesota there is still some land left, and plenty, besides that, can be bought from railroad companies for a low price. The only proper way is, to go and look out for yourself.

13 Months for a Year.

Every New Subscriber for 1878 sent in during November will receive the next month's paper free. (See page 413.) This applies to ALL subscribers, whether coming singly at single rates, or in clubs at club rates, or in premium clubs.

The Fairs.—With few exceptions, the fairs throughout the country have been more than usually successful. For many years, farmers have not been in such good spirits as they now are, with present prosperity and favorable future prospects before them. They have consequently not only made a good show of stock and products, but they have generally crowded to the fairs, themselves and their families, and have put the different Agricultural Associations into easy financial condition. It is worthy of note that those fairs which have been devoted mostly to purely agricultural matters, and have avoided the horse trots and miserably poor side-shows, have done the best. The New York State Fair stands every year a conspicuous example of what an Agricultural exhibition ought to be; and although the management is most liberal, the grounds beautifully and expensively furnished, and no outlay is spared to offer the public an interesting and instructive show, yet it has a handsome surplus to its credit. We do not wish to reflect on other managements, or blame the executives of other societies, for what we feel to be injudicious, if not erroneous practice; "every one to his taste"; but we would repeat what we have often said previously, that it is in the power of the managers of the fairs to exert a beneficial influence upon their patrons, and especially upon the young people, and in their interest, every thing that is questionable even, should be rigidly excluded.

Interesting Notes on Potash.—All cultivators will be interested in Prof. Atwater's article on Potash in this paper. This substance is becoming more and more important as a fertilizer, and just as a kind Providence had prepared immense stores of Petroleum in the earth to be brought forth to yield light when the great whales failed to supply a sufficiency of lamp oil for the multiplying human race, we now find that, when the ordinary supply of potash needed to produce food plants has begun to grow scarce, the same kind Providence has provided for the emergency by wonderful beds of this valuable fertilizer, that until recently lay hidden in the bowels of the earth. These deposits underlie some 600 square miles in one locality, furnishing a supply for centuries, as Prof. Atwater tells us; and doubtless future discoveries will be made of other like deposits.

The Army and Navy Journal is the leading military journal in this country, and is recognized as part of the military establishment, receiving and publishing weekly the orders from every Army and Navy Head-quarters and Bureau. It is indispensable, therefore, to all interested in military affairs. Rifle practice receives much attention, this journal having originated and advocated the movement for improved rifle shooting, which has been so successful in this country. Its editor was, for the first three years, President of the National Rifle Association, which has recognized his services by electing him an honorary director for life.

Nails in the Stomach.—"M. W. S.," Fort Valley, Ga. The presence of sharp bodies in the stomach of an animal, frequently causes death. Nails, pieces of wire, pieces of glass, and such pointed or sharp-edged bodies penetrating the coats of the stomach, produce irritation and inflammation, and finally death. It is a marked symptom that deaths from this cause are sudden and without warning, and seem to be painless.

Rice Hullers.—"J. A. M.," Sarepta, Miss. Rice hullers of many kinds are made by Squiers & Sons, of Buffalo, N. Y. Had you given your full name, as every correspondent should do (for private use only,) we should have replied by mail some time ago.

A Kansas Hedge.—"R. S. M.," Woodson Co., Kas. It is not possible for us to advise you intelligently from the information at hand. You should state what kind of a hedge, its age, and its previous treatment, or at least when and how it was last pruned. If an Osage Orange hedge, has it been lopped, and when?

The Autumn Horticultural Show.—The N. Y. Hort'l Society's Exhibition took place at Gilmore's Garden, Sept. 26th–28th, and was a complete success in all Departments. In fruits, the show of grapes, apples, and pears, was excellent, and in vegetables, the collections were such as are not often seen at horticultural exhibitions. The display of what are known as hot-house or stove plants, exceeded anything before ever seen at any of the previous shows; so perfect was the development and wonderful the markings of many of the "leaf plants," that it was difficult to convince the uninitiated that they were natural productions. The display of Cut Flowers and designs was also large, but in these there was no advance over former exhibitions. A Miniature Flower Garden, the beds cut out in the grass, and planted to show the ribbon line style of flower planting attracted much attention; it was exceedingly well done, and reflected great credit on the skill and enterprise of the exhibitor. One difficulty connected with the Society's exhibitions must be remedied—so far, no distinction of class is made, so that amateurs are forced to compete, if they compete at all, with professional florists and nurserymen. It is probable that the Society, at its next exhibition, will have the articles offered in separate classes—one for amateurs exclusively, and the other for professional florists and nurserymen.

Basket Items continued on page 441.

A Remarkable Collection of Trees

is described in a handsome book that we have just received, which is entitled *Arboretum Segrezianum.* It contains a catalogue of the trees and shrubs that are in cultivation at Segrez, which is a country place about 14 miles west of Paris, the property of M. Lavallée, the author of this volume. We suppose that this arboretum, although at most only twenty years old, is one of the largest and bids fair to be one of the best in France. On the whole, it is probably the best named large collection of trees and shrubs in that country. When we saw it, less than ten years ago, it was thought to comprise about 3,000 species, of hardy trees and shrubs, acquired from very various sources, mainly by purchase, and bearing the names under which they were received, and the perplexed proprietor was endeavoring to arrange their names in something like consistency and correctness. In the preface of his work, he gives an almost pathetic account of his difficulties and troubles; of the same tree or shrub doing duty with the nurserymen for a half dozen others, while on the other hand different species would be received under the same name; how many species common in the catalogues are really not in cultivation at all, while others, said to be very rare, were met with in profusion; how "*quelques horticulteurs*," had the habit of changing the names of long-cultivated species and baptizing them anew for the sake of a fresh sale, while others would not hesitate to supply orders for species they really had not with those which they happened to have. The result was that he had to form a complete library of tree-lore, and, forgetting as much as possible the received names, determine them all afresh for himself, under such scientific aid as he could command. Hence the present catalogue, in which all the species and marked varieties now possessed (over 4,000 in number) are systematically arranged, the origin or native country indicated, the synonymy given rather fully, and the principal published illustrations cited. All of which should be very useful to those who have similar establishments to form, or to take care of. There are a good number of species of which we should like to see the representatives and know the authority for the naming. For instance, among American wild plums, besides the *Prunus Americana*, *maritima*, and *Chicasa*, the enumeration comprises *Prunus nigra*, *pygmæa*, *hyemalis*, and *acuminata*. That some names, especially of persons other than French, should be misprinted, is not surprising, but the book is very handsomely got up.

We were pleased to find in the preface a brief historical sketch of the early tree-planters and collections in France, from the time of René de Bellay, bishop of Mans, in the middle of the 16th century, and of the elder Robin, who founded the first botanical garden at Paris at the close of that century, down to Duhamel and to Andre-Michaux, who lived in our own time. A. G.

[Many readers will be glad to recognize in the well-known signature to the above, the fact that Prof. Gray has returned from his long summer excursion. In company with Sir Joseph Hooker, Prof. Leidy, and other naturalists, and—in part at least—with Prof. Hayden's Survey, he made very thorough explorations in New Mexico, Colorado, Utah, and California. In a private note written the day after his return (Sept. 22d), Prof. G. says: "Never was an expedition from first to last so fortunate. * * * From California to Cambridge with but two stationary beds was trying, but we stood it well. Have been everywhere, and everywhere fortunate, *have learned much*, worked hard, and enjoyed it all. Are at home, well and strong—what could we ask more?"—Our only excuse for printing a mere private note is to call the attention of our younger readers to the fact that Prof. Gray, who stands in the front rank of the world's most eminent scientists, in recounting to a friend the benefits of his long journey, gives prominence to the fact (though the Italics are ours) that he has "learned much"—such men never stop learning. Only the shallow cups get soon filled.—ED.]

The New York State Fair.

A more than usually successful fair of the New York State Agricultural Society, held at Rochester, Sept. 17–21, has proved the wisdom of depending upon legitimate attractions for success, and has shown that farmers *will* patronize a purely agricultural exhibition, without the too common horse-races and objectionable side-shows. Plain farmers are capable of enjoying the beautiful and the useful; and at Rochester these were provided for them in finely laid out grounds, and an unusually good display of machinery and live stock. We are obliged to stop here, because for once the dairy and farm products were deficient, not to say poor in the extreme. For the greatest dairy State in the Union to fail to show one good sample of butter, unless it might have been a small roll exhibited by a farmer's wife, was something remarkable, if not blameworthy. There were, however, a few things to be seen well worthy of note. The agricultural machinery was excellent in every way, and it was pleasant to observe the lively interest exhibited by the crowds of visitors in its examination. The growing necessity for farm machinery of all kinds, will soon oblige every farmer to become an expert in its selection and its use, and every opportunity to study it should be seized and utilized. The live stock was good, but not so numerous as usual. Counting from the Catalogue, we find 170 entries of horses, and, curiously enough, precisely the same number of cattle of the different breeds. Among the latter, the Ayrshires were the most numerous, numbering between 40 and 50. The best of these were exhibited by a Canadian breeder, Mr. J. W. Jardine, of Hamilton. The Jerseys were conspicuous chiefly for the presence of herds, whose owners are new to fame as prize-winners, and the absence of the old set of victors in the ring. The Messrs. Burden, of Troy, bore off the most of the prizes in the Jersey class. Of Dutch cattle; (why will they call these Holsteins?) the "Unadilla Valley Stock Breeders Association" exhibited the best. More than 40 Shorthorns were shown; the "Princesses" of C. F. Wadsworth, Geneseo, N. Y., took the lead; "Treble Gloster," owned by Fellows and Butts, of Clifton, took first premium for bulls over three years old. A score or more of Devons, and a few common cows, working cattle, and fat oxen, made up the show. A Shorthorn cow took the first prize as a milker. A monstrous grade Shorthorn ox received the first prize for fat cattle. Amongst the sheep a lot of cross-bred or grade Cotswold-Merinos were very noteworthy, as showing how profitable a sheep both for wool and mutton this hardy cross can be made. The South-Downs of J. D. Wing, and the fine-wool Merinos of Mr. Chamberlain and Carl Heyne were, as usual, beyond competition. A good assortment of pigs were shown; those breeders, however, who made the most show, failed to take the first prizes. Of poultry but a small show was made.

The Harvests of the World, and the Markets for our Products.

A review of the condition of the now completed and ascertained harvests of the civilized world is interesting, as it furnishes a key to the question—what will be the probable condition of our markets, until the next year's crop begins to influence them? From the most trustworthy sources of information the Wheat surplus of the following countries, which compete with the United States for a market, is estimated as follows:

Egypt	10,000,000	bushels.
Canada	8,000,000	"
Spain	2,000,000	"
Germany	2,000,000	"
Austria and Hungary	8,000,000	"
Total	30,000,000	"

This insignificant quantity is all that can be thrown upon the markets of the world from these countries. Italy has no surplus to export, and Russian trade is crippled by the war, in which that country is now engaged, so that there will be small supplies from there, to meet the serious deficiencies which we have to note. These deficiencies exist in France and Great Britain. The necessities of France will call for an import of 24,000,000 bushels, which will nearly swallow up the whole surplus above mentioned, as expected from all probable sources. The harvest of Great Britain has been very deficient, not yielding more than 43 per cent of the quantity of wheat usually consumed. Considerably more than half the needed supply of Great Britain will therefore have to be imported. The quantity required is estimated at 90,000,000 bushels. There is no source from whence this enormous amount of wheat can be procured other than the United States. As it happens, we have practically the world's market in our hands, and the price of wheat may now be fixed at New York, instead of, as heretofore, by our rivals at London. But we are not to understand by this, that any unreasonable price can be put upon our grain, and realized. There is such a thing as prohibitory prices, by which business is stopped altogether. The fact is, we can get full value for our wheat, but no more, for if prices should become unreasonably high. an active economy will be exercised in the consumption of those countries having either some surplus, or just sufficient for their own wants; and supplies will appear from unexpected quarters, to compete with ours. Then the bottom would drop out of our market, and our stock partly remain upon our hands. This should be considered, lest too high expectations should be formed, which will not be realized. To spare 90,000,000 bushels, will draw very closely upon our granaries, and will add $120.000,000 to our income in hard cash. In our present condition, the moment this outward current of grain and inflow of money begin to operate, business will feel the beneficial effects, and give us reason to congratulate ourselves that fortuitous circumstances combined for our advantage, just when we were in the greatest need of help.

Bee Notes for November.

BY L. C. ROOT, MOHAWK, N. Y.

It will be remembered by the readers of these Notes that one of the best swarms in my apiary, the present season, is one that was wintered upon its summer stand. I am generally opposed to out of door wintering, yet in an ordinary season. bees may be so wintered with success. Even when the season is severe, bees may be wintered on their summer-stands more successfully, when the necessary requirements are observed, than when placed in a damp, poorly-ventilated cellar. A cellar, properly ventilated, so arranged as to be kept dry, dark, and of an even temperature, where the bees may remain perfectly quiet, and undisturbed, is undoubtedly the more preferable place for wintering. If, however, it is thought, after due consideration, best to winter out of doors, the hives should be protected in some way from the wind, and the cap, or vacant space at the top of the hive, well packed with cut straw or chaff. This packing will absorb the moisture, and at the same time retain the warmth. When wintered indoors, I use a small quilt spread over the frames.

The Honey Crop in Central New York.

The yield, generally, has been below the average, and besides being less in quantity, it is generally inferior in quality, or, rather, in appearance. This is from the fact that it was gathered less rapidly than ordinary, and the combs thus became soiled and yellowish. It does not follow that the flavor is inferior, it is quite likely to be the reverse. Having recently visited the dealers in New York City, and inspected the honey from the aparies of several prominent beekeepers, I find that the average appearance is as stated above. In my home apiary of 150 swarms, I have but very little increase in numbers, and have marketed 2,775 lbs. of box honey, and 6,644 lbs. of extracted. From another apiary, seven miles away, results are better. One of the peculiarities of this location is, that the bees gather no dark honey, and the white honey is of superior quality. In this apiary there were, in the spring, 65 swarms; this number was increased to 100, and the honey marketed was 3,225 lbs. box honey, and 356 lbs. extracted, showing a much better average of box honey than from the 150 swarms above mentioned.

Questions and Answers.

ABOUT VENTILATION.—"W. H.," of Ironton, Mo., asks: "Is it best to close the bottom ventilation, or to leave it open in wintering bees out of doors? There is a 3-inch square hole in the bottom board of my hive, covered with wire cloth."....I am inclined to think that the lower ventilation is not essential, yet there are conditions that seem to make it necessary. The lower entrance to the hive, of necessity, gives some ventilation. The arrangement of this lower opening, so that it may not become closed by dead bees, is of much more importance than the question of lower ventilation. If the hole in the bottom-board were 12 inches square, and covered with wire-cloth, it would not prevent injury, should the small entrance become closed, and the bees find themselves confined to the hive. Some of our best beekeepers make hives with a 6x12-inch ventilator in the bottom-board, which may be opened or closed with a slide. For wintering, these slides may be opened a short distance, leaving the opening in such a position, nearly under the cluster, that the dead bees will drop through, thus avoiding the possibility of its becoming clogged; while the opening is so near the cluster that the bees are aware of their perfect freedom. The hole in the bottom-board, 3 inches square, is large enough, but the wire-cloth should be removed, and a slide used, that may be opened or closed at pleasure.

A Very Unjust Custom.

"James is naturally smart, and we are going to give him an education, perhaps make a lawyer or minister of him."...."George don't seem to get along well with his books—is rather dull—and we shall make a farmer of him."——We have heard talk just like this, and the majority of people *act* upon this principle. It is rank cruelty—rank injustice, at any rate. It is giving to the rich, and withholding from the poor. If through the fault of his parents, or otherwise, George is less endowed with intellectual gifts, he should have all the more done for him to make up any natural defect, by culture, by discipline, by exercise of the mind, and thus place him upon a par with his more gifted brother. If a youth dislikes arithmetic, or any particular branch of study or thinking, it shows a deficiency in that faculty, which culture and study should make up, and thus produce a well balanced mind. We abominate the whole system of "elective studies," now so popular in some schools and colleges, which allows a scholar to mainly cultivate those mental powers, in which he is already most proficient. A rigid course of diverse study, planned to develope uniformly the various faculties of the mind, is the one which will turn out the best and most useful men. After a good general groundwork is thus laid, and the thinking faculties are well and uniformly developed, the final study may be directed to some specific line, that will be required in a particular business, or professional life.

Why It Pays to Read.

One's physical frame—his body—his muscles—his feet—his hands—is only a living *machine*. It is the mind, controling and directing that machine, that gives it power and efficiency. The successful use of the body depends wholly upon the mind—upon its ability to direct well. If one ties his arm in a sling, it becomes weak and finally powerless. Keep it in active exercise, and it acquires vigor and strength, and is disciplined to use this strength as desired. Just so one's mind, by active exercise in thinking, reasoning, planning, studying, observing, acquires vigor, strength, power of concentration and direction.

Plainly then, the man who exercises his mind in reading and thinking, gives it increased power and efficiency, and greater ability to direct the efforts of his physical frame—his work—to better results, than he can who merely or mainly uses his muscles. If a man reads a book or paper, even one he knows to be erroneous, it helps him by the effort to combat the errors. The combat invigorates his mind.

Of all men, the farmer, the cultivator, needs to read more and think more—to strengthen his reasoning powers, so that they may help out and make more effective, more profitable, his hard toil. There can be no doubt, that that farmer who supplies himself with the most reading, the most of other men's thoughts and experiences, will in the end, if not at once, be the most successful.

"The mind makes the man," is a trite but very true adage. How much above the brute that toils with him, is the man who merely works, eats, and sleeps, and cares for his progeny? The brute does all this. The man rises in dignity, in self respect, in the respect of others, just so far as he rises in intelligence. We have a certain regard for the ant, or colony of ants, that by long, hard, patient toil, gathers a fine, large, showy mound of earth—yellow earth it may be, or of silvery white. In what is that man superior to the ant, who spends his life wholly in scraping together a mass of land, and a pile of yellow gold or white silver, and a large house, lives in it, and dies there? He may be called a successful man, a rich man, but what does that amount to after all. If he be rich in good deeds, if he be an intelligent man, if he be able, by the superior cultivation of his mind, his thinking and reasoning powers, not only to plan successfully for himself, but to give wise counsel to others, he commands our real respect.

Farmers, think of these things. Now, and for a few coming months, while the field work does not press, devote *some* time each day or evening to mind development. Lop off, if need be, a dollar or two here or there, and with it buy one or two books, especially those treating of your own business, of the character and nature of the soils you till, of the crops you raise, of the animals you have to do with, their differences and character, etc. This will lead to further thinking and reasoning; it will develope mind-power; it will make you more intelligent; it will raise you higher in your own estimation, and higher in the estimation of your family, and of your neighbors. It will aid you in planning better for the future, and will thus really pay in dollars and cents. Turn to the long list of books on the business pages of this paper, and select some book, first one that will interest both yourself and family. Let it be read and studied well. When its thoughts become your own, lend it to a neighbor and get him to read it. Then choose another book, and do the same with it. Next summer's toil will be more cheerful, you will have more to think of while following the plow, the harrow, etc.; and we firmly believe that a year from now you will have more dollars in your pocket.

Science Applied to Farming.—XXXV.

Potash in Fertilizers.—The Necessity and Functions of Potash as Plant-food.—The German Potash Salts.

I am in receipt of inquiries from farmers in all parts of the country, about the "German Potash Salts," what they are, and when, where, and how it will pay to use them. There are abundant indications that, on many soils in the older States, the available supply of potash has become reduced, and must be re-supplied or the crops will fail. We are having here precisely the same costly and bitter experience that the farmers on the other side of the Atlantic have gone through with. They are beginning to find the way out of the difficulty, and that way leads down some twelve hundred feet below the surface of the earth into the depths of the potash mines in the region of Stassfurt, in Germany. Commencing near there but a few years ago, the use of potash salts as fertilizers has already become almost universal in Germany, has extended largely into other parts of Europe, has reached to the impoverished fields of our own country, and even to the coffee plantations of Brazil and Ceylon. The amount used has increased from a few hundred to many thousands of tons per year. The Stassfurt fertilizers have excited an interest and reached an importance comparable with that to which Peruvian guano attained years ago.

Potash is an ingredient of every cultivated plant, and none can grow without it. In the *American Agriculturist* for March, 1876, were described some elaborate experience by Dr. Nobbe, of Tharand, Germany, which showed that potassium is necessary to the formation of starch in the leaves. As Dr. Nobbe says, "Without starch the plant cannot assimilate (the materials needed for the growth) and shows no increase in weight because, without the cooperation of potash in the chlorophyle grains, no starch is formed." Another function of potash has been pointed out by Messrs. Lawes and Gilbert as one of the results of their famous experiments at Rothamsted, in England, namely, that it aids leguminous crops, such as clover, to assimilate the nitrogen needful for their growth.

The Amounts of Potash in Different Plants and Manures

are, of course, quite variable. Clover, beans, peas, and other leguminous crops, the common grasses, potatoes, tobacco and hops, have a good deal of potash. Turnips, beets, and carrots, contain less, and corn, wheat, rye, oats, and other grains less still, though the stalks and straw contain a good deal of potash. Taking into account the size as well as composition of our ordinary crops, hay, clover, corn, tobacco, hops, potatoes, and roots, take large quantities of potash from the soil, while grain crops exhaust it less. Of the common manures, horse manure, particularly if it contain a good deal of straw, is quite rich in potash. The same is true of manure from sheep and swine. That from neat cattle contains less. The urine of all these animals has a great deal of potash. Our ordinary commercial fertilizers, such as superphosphates, bone, fish, and slaughter-house refuse, contain little or no potash. Peruvian guano yields a small percentage.*

Sources of Supply of Potash.—The German Mines and Salts.

The soap boilers and glass manufacturers have outbid the farmers for the potash of wood-ashes. It might be obtained from sea-water, but the expense of boiling down would make it too costly. Very fortunately, this process of evaporation of sea-water, which, if carried on by artificial means, would be so costly, has been provided for by nature on an enormous scale in North Germany, and we have the products in the deposits referred to. The area of the deposits is calculated at some 600 square miles. Mines have been opened at Stassfurt, Leopoldshall and Westeregeln. The potash deposits are found at depths varying from 300 to 1,200 feet. Though thousands of tons are mined yearly, the supply can not be exhausted for centuries.

Composition of the German Potash Salts.—High and Low Grade Articles.

The potash salts as taken from the mines contain only small proportions of potassium compounds, the bulk consisting of materials which have comparatively little agricultural value and are sometimes positively injurious. They are, therefore, subjected to chemical treatment, by which the potash compounds are more or less completely purified. As prepared for market, the potash fertilizers contain potassium in the form of either chloride of potassium or sulphate of potash, and, along with these, other compounds, as shown by the following figures from circulars of the German manufacturers.

BRANDS OF POTASH SALTS.	POTASSIUM AND OTHER COMPOUNDS.—LBS. IN 100 LBS.					
	Sulphate of Potash. lbs.	*Chloride of Potassium.* lbs.	*Sulphate of Magnesia.* lbs.	*Chloride of Magnesium.* lbs.	*Chloride of Sodium.* lbs.	*Actual Potash in Potassium compounds.* lbs.
1. Crude Kainit........	17–26	—	10–12	14–17	32–40	9–14
2. Crude Sulphate of Potash ("Dung Salt")	18–22	—	16–20	2–4	35–50	9–12
3 Prepared Kainit.....	24	—	16–18	2–4	36–42	13
4. Crude Sulphate of Potash-Magnesia.....	29–33	—	17–22	3–5	30–35	15–18
5. Five-fold Concentrated Salt (Chloride)	--	80–85	1–2	--	12–16	50–52
6. Purified Sulphate of Potash	70	—	5–10	—	5–10	38
7. Purified Sulphate of Potash	90–95	—	3–6	—	1–2	50–52
8. Purified Sulphate of Potash—Magnesia....	54–57	—	34–38	—	1–2	28–30

All the brands contain more or less of other than potash compounds. Of these the sulphate of magnesia may be valuable, since it is useful as plant-food, and further, aids in diffusing the potash through the soil and thus bringing it within reach of the roots of the plants. The chloride of sodium, or common salt, though not needed for plant-food, is useful in rendering other materials available, and hence often quite valuable as a fertilizer. For certain crops, however, like potatoes, sugar-beets, and tobacco, it is apt to be detrimental, probably on account of the chlorine which it contains. The chloride of magnesium may be injurious.

Nos. 1, 2, 3, 4 in the table are low grade articles, furnishing only 9 to 18 per cent of actual potash. The crude Kainit, No. 1, is the material as dug from the mines and ground. The prepared Kainit, No. 3, is made by roasting the crude Kainit. The "Dung Salt," No. 2, is a waste product formed in the manufacture of the high grade articles. Nos. 5, 6, 7, 8 are high grade articles of two kinds, viz., the chlorides or "muriates," (No. 5), in which the potassium is combined with chlorine, as chloride of potassium, or "muriate of potash," as the dealers call it, and the sulphates, Nos, 6, 7, 8, in which it is combined with sulphuric acid, as sulphate of potash; little of No. 8 is manufactured.

It is becoming customary to characterize these salts by the percentages of sulphate or chloride of potassium they furnish. Thus an "80 per cent sulphate" is one that contains 80 lbs. of sulphate of potash in 100 lbs. of the salt. An "80 per cent muriate" would in like manner contain 80 per cent of chloride of potassium.

Most Desirable Grades for Our Use.

It is clear that for this side of the Atlantic the high grades must be the most economical as potash fertilizers. The sulphates are, on the whole, preferable, but the potassium in these is more costly than in the chlorides. The chlorides sometimes injure the burning quality of the leaf of tobacco, decrease the amount of sugar in sugar-beets, and of starch in potatoes, and make the latter less "mealy" than is desirable. The sulphates, on the other hand, are always safe. For buckwheat, corn, wheat, oats, and other grains, for leguminous crops and grasses, and for wet soils, the chlorides are preferable because cheaper. Generally speaking, the most desirable grades will probably be—

For *Sulphates:* the highest grades, which contain from 75 to 90 per cent, or more, of sulphate of potash, corresponding to from 40 to 50 per cent of actual potash.

For *Chlorides:* the "muriate" with 80 to 85 per cent of chloride of potassium, corresponding to 50–53 per cent of potash.

By the above table, the amount of actual potash in the low grade salts, varies from 9 to 18 per cent. Some articles sold in this country have yielded as low as 7 or 8 per cent. The disadvantage in purchasing these poorer articles is a double one. Not only do they furnish very little potash, the bulk being made up of other and inferior or injurious compounds, but the purchaser has to pay the cost of freight and handling of this extra material between the mines in Germany and his farm.

When, Where, and How to use Potash Salts.

As to soils. Whether a given soil is deficient in potash or not can be best told by actual experiment. In general, potash is more likely to be lacking in light, sandy, and calcareous (lime) soils, and in those consisting largely of decayed vegetable matter, like peat and muck beds and moors. It is more apt to be plenty in loamy and clayey soils that come from what the geologists call igneous rocks, such as trap, granite and syenite. But in soils of either of these classes, the available supply may be reduced by cropping. Where guanos, phosphates, bone, fish manures, and other fertilizers rich in nitrogen, phosphoric acid and lime, but furnishing little or no potash, do not bring as large returns as formerly, a trial of potash salts is recommended.

As to crops. The potash salts have proven especially good for fodder crops, like grass and rye; for leguminous crops, such as clover, beans, peas, and vetches; and for corn, potatoes, roots, tobacco, and fruits. The immediate effects upon grain crops are usually not so beneficial.

The method of applying potash salts is of great importance. Cases are common—I have known several myself, where crops were injured or destroyed by improper application. The great point is to have the material uniformly diffused through the soil, so as to be within as ready reach of as many of the roots as possible, and not to be concentrated in single places in such quantity as to injure the plants. The best way to secure this is to apply it some time before the seed is sown in the fall for the coming season's crop, for instance, so that the water from rains and melting snows may have opportunity to distribute the potash through the soil; or to mix with manure by spreading on the heap as it accumulates; or to compost with muck, farm refuse, or earth, and apply as long as possible before the growth of the crop begins. If neither of these ways can be followed, the next best plan is to mix the salts with three or four times their bulk of earth, spread the mixture uniformly, and either plow under or harrow in. Potash salts are best applied, not alone, but mixed with phosphates and nitrogenous fertilizers.

Peruvian guano, ammoniated phosphates, bone and fish, each furnish nitrogen, phosphoric acid and lime, and, if superphosphated, sulphuric acid also. The potash salts supply potash with more or less sulphuric acid and magnesia. Such mixtures, therefore, would form "complete fertilizers."

In Germany, where the potash salts have come into very general use, quantities corresponding to from 200 to 400, or at most 500 lbs. of the higher grades, and from 300 to 600 lbs. of the lower grades, per acre, are recommended. W. O. ATWATER,
Wesleyan University, Middletown, Conn.

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Ogden Farm Papers.—No. 93.

BY GEORGE E. WARING, JR.

I now refer back to the first of this series of papers—published in the *American Agriculturist* of January, 1870. I there gave an account of the purposes and intentions with which the enterprise of improving and cultivating the farm had been undertaken (in September, 1867). For the satisfaction of those who have not access to that first paper, I quote the following: "I have this basis to go upon: My land had been exhausted by a long series of robberies that had sapped its very vitality. Henceforth it must take in much more than it should be called upon to give out. Much was to be hoped for from draining and deep cultivation, but in addition to all this, the impoverished soil must receive manure from abroad. * * * * * The details of the plan included *heavy over-stocking* and *fancy prices.* The one should help the improvement of the soil, and the other the money income. The two fundamental themes of the project were these: 1. There is hardly a limit to the productiveness of land. If 50 cows are put upon 50 acres, and kept in good condition by buying food at the outset, their manure will in time make the land rich enough to support them, winter and summer, without buying. 2. *Extra price is all profit.* Given all the appointments of a good dairy, it *costs no more* to make butter worth 75c. per pound than 50c. per pound. No more cows are kept, no more and no richer food is consumed, and no extra help has to be hired. In my neighborhood butter *costs* about 30c. to make; at 50c. there is a profit of 20c., and at 75c. there is a profit of 45c. The 20c. is earned by the investment of capital and labor; the extra 25c., by care, skill, and neatness. * * * * * * The farm was to have ten years rest. It is charged with no extra burdens; it has no expensive family to support, only the household of work-people, who are necessary for its improvement; and it has no income to pay, (except interest on borrowed capital,) as neither my associate nor myself is to receive any compensation during the course of the improvement; * * * * until the expiration of ten years, when the whole concern, farm, stock, implements, and investments are to be sold at public auction. * * * * The amount of profit to be divided, or the amount of loss to be made up, will be the best test, as to whether the work at Ogden Farm has been practical farming or not, for if it does not *pay*, it can not be considered *practical.*"

The term of ten years has now expired, and I proceed to the consideration of the results. In one respect, the original plan has not been carried out—we did not wind up the affair with an auction. Mr. Geo. F. Tyler, my associate and capitalist, with my full assent, has deeded the whole property to his son, and it is still to be carried on under my general direction. The accounts are not yet fully made up, nor can they be for some months, but it was clear that the total result would show a considerable loss of money. If my principle—quoted above—is to be adhered to, the work at Ogden Farm has *not* been practical farming. I shall consider this part of the subject in a future paper. I propose first to take up some of the details.

From the very start, our main product—aside from live stock—has been Jersey butter. For more than a year we bought a large amount of milk, to increase the butter product, and we ran a milk-

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*For tables giving the composition of cultivated plants and manures, see Article XVIII of this series in *American Agriculturist* for June, 1876. See also tables in article for Oct., 1877.

wagon to sell skim-milk in town. Except for this, there has been very little indeed sold from the place, besides the regular semi-weekly product of butter, and the balance to-the-good in the "Produce sold" account, may fairly be set down as the net proceeds of the sales of butter. The skimmed milk and other sales would just about pay for the milk bought.

Produce Sold Account.

	Dr. to Purchases.	*Cr. by Sales.*	*Net Credit.*
Whole ten years......	$3,114.85	$23,321.82	$20,206.97
First year.......	No purchases.	826.07	826.07
Last year............	337.73	2,866.17	2,529.44
Best year, (1873)... ..	1,352.62	5,690.66	4,338.04

The year 1873 is the only single year, for which the account has been made up in detail. This was published in Ogden Farm Papers No. 49 (March, 1874). In this year the sales of butter were rather more than the "net credit" of all sales. We made 5,912 pounds, which we sold for (*net cash*, after deducting all charges for home consumption, expressage, and commission,) $4,472.85, being over 75 cts. per pound for the whole product.

For more than five years past, we have made all of our regular sales at $1 per pound, getting this price for all we could supply at all regularly. Usually in June, with many fresh cows, and with the Newport season not fairly commenced, we have had to sell our *surplus* for less—generally for 50 cts.—and we have always sold from 600 to 1,200 lbs. yearly, through an agent in Boston, on which we have paid 12½ cts. commission. Making all of these deductions, we have never averaged so little, for any year of the past five, as 75 cts. per pound. In securing this result, we have never made any considerable outlay, beyond what would be necessary in the care of any ordinary dairy. Indeed, as we have gone on and gained experience, we have cheapened and simplified our methods from those at first adopted, and I think we now make our butter as cheaply as any tolerably good dairyman in the country. Neither have we gone to any great expense in advertising. We have always taken the utmost pains to have the butter as good as it could be made, to put it up in an attractive form, and to make it known by actual trial. We began selling at 50 cts., and we took measures to get it into the hands of people who could appreciate it. We raised the price first to 65 cts., then to 75 cts., to 90 cts., and to $1—and there it has remained for five years past. Customers sometimes suggest that we ought to conform to the usual lowering of prices, but they rarely enforce the suggestion by stopping their purchases; when they do so, there is always some one else ready to succeed them. It would be pure guess work for me to say to what an extent this business might be carried, and any one else can guess as well as I can.

If butter-making had been our chief industry, we should have made fully fifty per cent more than we have, and I think I could have disposed of it all at the same price. Butter-making has always been incidental and subordinate to our business of raising and selling Jersey cattle, so that we have always kept some cows which were no longer of much use for the dairy, for the sake of their calves, and we have kept all in fair breeding condition, when by higher feeding we could have added very much to their butter product. It has been our aim to render the butter-making incident an important incident. I think it will be admitted that in this branch of our work we have been successful *and practical.*

Really the most important question about our enterprise, relates to the character of the soil, as affected by our course of treatment. For ten years we have bought very nearly all the grain fed on the place—and we have averaged the equivalent of 25 to 35 cows. For three years we bought nearly all of our hay; for three years more we bought about one-half of what was used; and for the last four years we have bought very little hay or forage of any kind. The total cost of the purchased food will be given in a future number of this series.

During all this time we have practically sold nothing from the farm save butter, a little skimmed milk, and a moderate number of cattle. When we began, the land was as poor as it could well be—so poor that the hay crop amounted to very little indeed. The first year we did not cut the equivalent of ten tons all told. In 1876 the land (60 acres) was divided about as follows: yard, house, and barn-lot, garden, etc., 4 acres; fodder-corn, 6 acres; oats, (cut green), 6 acres; grass, 44 acres. The crop of hay and cured oats (so much as was not fed green) was over 95 tons, although the latter part of the season was so very dry that there was no second crop at all. In an ordinary season we should have had at least 20 tons. The crop of 1877 has been very poor so far as hay was concerned, (although the oats were a capital crop, and the fodder-corn very fine). The failure of the grass crop was not due to the quality of the land, but to the fact that the drouth—and the immense cloud of grasshoppers—of 1876, entirely destroyed the grass. Where we cut 2½ tons of hay to the acre in 1876, we had cut a half ton of weeds in 1877. We have always cut some of the early grass for soiling—less this year than usual.

How much of the improved condition of the land is due to draining, and how much to the large amount of manure made on the place, can not be determined. Both have been important. About six acres was, some 7 or 8 years ago, plowed about twelve inches deep. The subsoil of blue clay, which was brought to the surface, was a lasting injury to the land. It still shows the ill effect of the treatment, in spite of time and manure. Certainly in this case—and I think many other similar instances could be found—deep plowing was a grave mistake, and it will be well for all enthusiasts who are disposed to follow the extreme theories of the deep plowers, to study very cautiously the character of the subsoil which they propose to bring to the surface. I confess to having been an advocate of these theories for many years, and I have seen them sustained on certain soils, but I have slowly come to the belief that it is usually the safest plan to leave the "surface soil" where nature made it, and where she always keeps it in her most fertile forests and fields.

Tim Bunker on the Canning Factory.

"Have you heerd on't," asked Uncle Jotham Sparrowgrass, one evening last winter, as he walked into our sitting room, and sat down by the stove—"we are gwyne to have a factory in Hookertown, next summer, to put up tomatoes and apples, and all sorts of fruits and vegetables, in tin cans."

"Want to know!" exclaimed Mrs. Bunker, raising the gold-bowed spectacles that Josiah, our son-in-law gave her, "where did you get the news?"

"Deacon Smith told me so over to the bank to-day—capital is all raised and money all promised whenever they are ready to begin. They used to have the same kind of thing over on the Island more'n thirty years ago, only they used glass cans instead of tin, and the work was done at home instead of in a factory. Don't believe they'll du it any better now—ye see if they du—Mrs. Sparrowgrasses presarves will never be beat in our day."

"It will be just like the sorghum mill started here in war times—see if 'taint," said Jake Frink. "They made a great swell, and you'd 'a thought that Hookertown Street was gwyne to run with merlasses. The thing went up in tu year, and now yer can't git any kind o' decent sweetening short of fifty cents a gallon; I don't take any more stock in that sort of thing."

"Nobody expected you would," said Seth Twiggs, dropping a live coal from the stove on the bowl of his meerschaum, "your capital is already invested down to the gin palace."

"The age of merikles ain't past yit, is it?" said Tucker, in a meditative mood.

"I wonder if there'll be any rum made of the leavings?" inquired Jones, expectantly, recalling his experience on a sugar plantation.

"Not a bit of it," said Seth, with a merry twinkle in his eye, and an extra puff at his pipe, that by this time was in full blast. "Suckers will go dry around the canning factory when they git her started. Ye see they work up the skins and leavings of the termarters into catchup according tew the Scripter, 'gather up the fragments that nothing be lost,' as Mister Spooner would say."

This conversation of my neighbors, last winter, was the first I heard of the new enterprise. On further inquiry, I learned that a Hookertown young man, named Rudd, had been in Jersey for several years, working at the business in a factory there, and was coming home to set up for himself. I liked this for two reasons. It was a new industry, and would help the town, and then it always looks well to see a Hookertown boy, when he gets started in life, coming back among his old neighbors and friends, to help himself, and help them get ahead in the world.

Rudd had got some money, and, what is better, had learned the business, and got a good name for capacity and integrity in carrying it on. So he passed muster at the bank, and the neighbors who had money, like Deacon Smith, and myself, took stock, and those who had brains, and not much money, like Mr. Spooner and the Schoolmaster, talked in its favor at the Farmers' Club, and men, like Jones and Tucker, who had neither brains nor money, threw up their old hats and hurrar'd for the factory that was to be. A few old stagers, like Uncle Jotham Sparrowgrass, and Jake Frink, hung on the outskirts of the movement, and tried to make backwater. But it didn't amount to any more than a row boat in the wake of a Connecticut River steamer, coming down when the steam is all on, and the tide is in her favor. The thing ripped right along just as if nothing was the matter.

The first thing Rudd did after the capital was taken, was to get the farmers around Hookertown to agree to raise tomatoes. He said they were just as easy to raise as corn or potatoes, the crop was just as certain, it did not exhaust the soil near as much, and would pay better for the labor. Then he distributed the seed, and told them how to start the plants in hot-beds, and when to put them out. There was a great stir in Hookertown, and tomatoes was the town talk all through the spring. The general inquiry on Hookertown green, between the meetings on Sunday, was, not "How is your folks"? but "How's the plants getting along"? and "how many are you gwyne to put out"? Mr. Spooner, I suppose, did not know any thing about the worldliness of the people, but thought they were discussing the sermon, or other things of the kingdom. Meanwhile the factory was put up on the Shadtown road, just on the edge of the village, where there is plenty of elbow room. It is a plain cheap building, with ample space upon the ground floor, and a half story above for storing cans after they are made. Fifty thousand cans require a good deal of room, and these can be made and stored when fruits and vegetables are out of season. Every body went to see the new factory, with its broad ten-feet platforms all around it, to hold the fruit; the thousand or more bushel boxes piled up to the eaves; the steam engine; the tanks for scalding, and the bigger tanks for cooking; the patent sort of sausage stuffer for packing the tomatoes in the cans; the soldering machine where a boy seals two cans a minute all day long; the grinder where they work up the refuse, and make elegant tomato catsup. It was about as good as going to the menagerie to go to the factory, and see Mr. Rudd show up the various contrivances of the canning business to our women folks. They all wanted to see, and said they guessed Mr. Rudd understood the business.

Jake Frink said "He didn't know but the feller's head was level, arter all, but he wasn't gwyne to plant any termarters this year, any how."

Well, the factory has been running through the season, and the talk on the green now, between meetings, is, "How did yer termarters turn eout?" The yield runs anywhere from two to four hundred bushels, according to the manure and cultivation given to the crop. At four hundred bushels, at 30 cents a bushel—the gross amount is $120 an acre. There is a good deal of labor in picking, and marketing, but not more than in the potato crop. It has this great advantage, that it is disposed of directly from the field, has to be handled only once, and brings ready money on delivery. The factory has not only taken up all the tomatoes raised in this vicinity, but has a great many from New York to be canned here. It has also made a good market for all the pears in Hookertown, where this fruit flourishes, and can be raised in any quantity. At present it is taking in apples, pippins, greenings, Baldwins, and the wind-falls of most good winter apples. These are put up in gallon cans for pie-apples, and mostly shipped to European markets, where there is said to be great demand for this kind of canned goods. Another season a much wider range of products will be taken in, and I expect Jake Frink will be converted, and run a truck wagon. So you see, Mr. Editor, the report that Seth Twiggs' funeral had been attended by Mr. Spooner, and Uncle Jotham had emigrated to the unknown country, and Hookertown in general was ailing, is not correct. We are all here, and things is lively. The good time has come.

Hookertown, Ct., } Yours to command.
Oct. 1st, 1877. } TIMOTHY BUNKER, Esq.

Country Cottage, Costing $450 to $550.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

This plan is in response to many calls for very low-priced country houses, "some as cheap as lumber and nails can make them." The present one approximates that point, and will aid in devising others.....Two **Elevations** are given for the same ground plan; the first (fig. 1) is for a one-story house of the simplest design, with an entrance door, a neat porch, and two windows in front. The rear is arranged similarly. The roof is conspicuous, in keeping with its importance. No matter how cheaply one proposes to build a house, it is essential not to slight the roof. A roof fit for a one-story cottage, would answer equally well on a three-story house, so that relatively the cost of this part becomes greater, as the other parts become reduced and cheapened.......**Ground Plan,** (fig. 2).—The accommodations are quite sufficient for a small family, consisting of three rooms, two lobbies, a kitchen pantry, and a clothes press. The Lobbies protect the rooms from direct contact with the outside doors. The Living Room is large, and accessible alike from each entrance; it has windows front and rear, and is convenient to the Pantry; one entire side is unbroken, giving additional space for furniture, etc. The Pantry is shelved on two sides, and has a sash opening from the rear lobby, receiving light through the sash over the rear entrance door. The front Bedroom is of good size—large enough to be used as a sitting-room; it adjoins the rear Bedroom, and a Clothes-press, and has a window facing the road. The rear Bedroom is the most retired, and has a window looking to the rear. The Press or Closet is shelved and hooked in the usual manner. The door between the bedrooms might be dispensed with, but its convenience more than repays its cost.....**Construction.**—The Foundations are of common stone and mortar, laid in trenches, so as not to be affected by frost, and show 1½ foot above ground. The supports for the central partitions are stone piers, 4 feet apart. The Chimnies are of hard brick and mortar, passing through the first story in two flues, but joined together beneath the roof, and finished above as a single chimney. All the timber of the exterior frame is of 4x6 inches spruce. The sills are laid flat-ways on the foundation, and the upright frame-work stands upon them. The beams are of 1¼x8 inch spruce planks, they are notched 4 inches, to fit on the sill, and bear on the foundation, and are nailed to the studding and sills, binding the whole together. The ceiling strips are of 1¼x5 inch spruce, resting on the ties, and nailed to the studding. The rafters are 2x4 inch wall strips. All beams, studding, and rafters, are placed 16 inches apart from centers. The siding is of 10-inch dressed pine. The roof is covered with 18-inch pine shingles, laid on 1¼x2 inch shingling lath. The porch frame is of dressed and cornered timber, and is roofed with shingles on flooring laid face down. The flooring is 1¼x9 inch spruce "milled." The interior is plainly cased: for doors and windows 3½ inches wide; base 6 inches; chair back in the living room 3 inches; all beveled. All sashes and doors are 1½ inch thick. The interior side walls and ceilings are white sand finished, on brown mortar and seasoned lath. Many efforts have been made to devise something cheaper than plastering for the inside lining of walls, but no substitute has yet been found to equal it in cheapness or durability. Plastering as usually prepared and applied, conduces to the healthfulness of any apartment, emits no odors of moldiness, has no attraction or harbor for vermin, is impervious to air, and a non-conductor of sound. Where linings of thin wood or paper are used, it is necessary to deafen the partitions and ceilings, otherwise they will be noisy. Sound made in any one part will reverberate through the house with drum-like suggestiveness. Most of such materials absorb moisture rapidly from the atmosphere, and when at any distance from the house-fires, so as not to be warmed and dried, the moisture is retained in them. This is especially the case in chambers and closets. Rather than seek a substitute for plastering, it is better to extend its use, and if practicable apply it as an outside covering, as well as for inside linings. (I will describe such an application in another article.)....

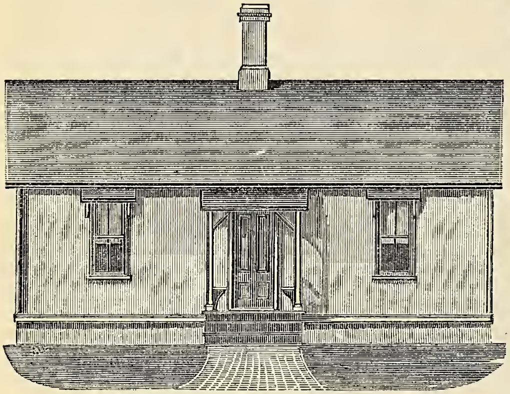


Fig. 1.—ELEVATION OF ONE STORY HOUSE.

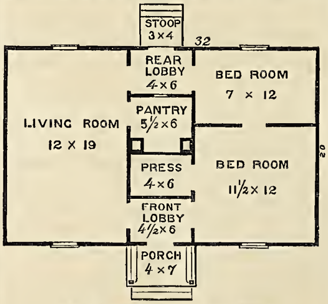


Fig. 2.—GROUND PLAN OF HOUSE.

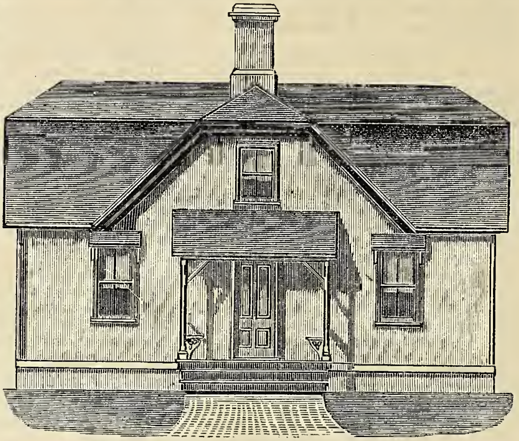


Fig. 3.—ELEVATION OF STORY AND A HALF HOUSE.

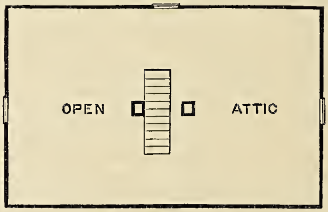


Fig. 4.—SECOND FLOOR.

The **Second Elevation,** (Fig. 3,) shows an enlargement of the first, by increasing the outlines of the roof, giving space for a **Second Floor,** (Fig. 4). Such space, though not immediately required for bed-rooms, would be valuable for many purposes. The appearance of the building is improved by the enlargement, and the extra cost will not exceed one hundred dollars.

Cost of Cottage—No. 1:

468 feet stone foundation, at 5 cents per foot..........	23.40
1000 bricks in chimneys, laid, at $12 per M..............	12.00
270 yards plastering, at 25 cents per yard..............	67.50
576 feet of timber, at $15 per M..........................	8.64
2 sills, 4x6 in. 80 feet long.	2 plates, 4x6 in. 32 feet long.
2 sills, 4x6 in. 32 feet long.	4 posts, 4x6 in. 10 feet long.
2 plates, 4x6 in. 20 feet long.	2 girts, 4x6 in. 20 feet long.
160 wall strips, at 13c. each............................	20.80
56 rough plank, at 16c. each............................	8.96
70 flooring, at 20c. each, $14; 115 siding, at 25c., $28.75	42.75
156 shingling lath, at 6c. each..........................	9.36
27 bunches shingles, at $1.50 each......................	40.50
Cornice and porch materials	21.00
4 windows, at $5 each, $20; 9 doors, at $3 each, $27.	47.00
Closet finish and nails, $26.09; cartage, $12.	38.09
Carpenter's labor, not included above	60.00
Painting..	50.00
Total..	$450.00

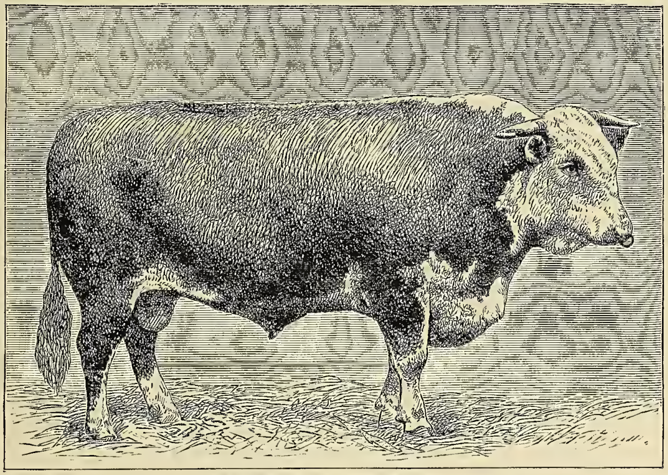
Extra cost of Cottage—No. 2:

3 windows, at $5 each, $15; 70 flooring, at 20c., $14....	29.00
25 siding, $6.25; 19 rough plank, $3.04..	9.29
23 shingling lath, $1.38; 4 bunches shingles, $6.00......	7.38
25 wall strips, $3.25; 400 brick, $4.80...................	8.05
Timber, $5; stairs, $20; porch, $5......................	30.00
Carpenter's labor..	16.28
	$100.00

[Of course the architect had in view the cheapest possible house, but it will occur to almost every one, that to extend the porches, to form verandas at the front and rear the whole length, will greatly add to the comfort and convenience of the family, and not add very much to the cost.—ED.]

The Hereford Breed of Cattle.

The white-faced, brownish-red cattle, known as Herefords, are one of the old established breeds. They have an excellent reputation as beef cattle and as milkers. For both of these useful purposes they are well adapted, by reason of their remarkably quiet disposition, which is evinced by their mild eye and placid deportment. A contented, docile animal is a profitable feeder, as little of its food is spent in nervous excitement, or accompanying restless action. For this contentment the Hereford is conspicuous amongst the best classes of cattle, if indeed it does not surpass every other competitor for the favor of the feeder, the dairyman, or the butcher. This breed is second only to the Shorthorn as a beef animal, when kept under equally favorable circumstances, but when placed in somewhat inferior keeping, it is preferable to it. For second-rate pastures, and in the hands of farmers who do not wish to feed up to very great weights, the Hereford will excel the Shorthorn. When used for the purpose of grading up inferior native stock, bulls of this breed are sometimes preferred to the Shorthorns, and they are becoming very popular in Colorado for this purpose. Since the extreme popularity of the Shorthorn during the past few years, the Hereford has fallen into the background, along with every other sort of beef-stock; but now that this Shorthorn excitement has passed away, each race of cattle has a fair chance to take whatever position in the public favor it may deserve, or can attain and keep. The Herefords are, therefore, now being brought into notice, and will, without doubt, acquire many friends among those breeders who are engaged in improving the coarse native cattle. There are now many good herds in different parts of the United States. One town in Illinois, viz., Beecher, Will County, has the distinction of possessing three herds, owned by T. L. Miller, who exhibited some fine animals at the Centennial, Wm. Powell, and Thomas Clark. Another good herd is owned by G. S. Burleigh, of Mechanicsville, Iowa. There are one or two herds in Ohio. At the New England Fair, these herds, owned in the State of Maine by C. A. McKenney, Munroe; G. E. Shores, Waterville; J. S. Hawes, South Vassalboro; G. and G. Underwood, of Fayette, received premiums.



HEREFORD BULL, "LITTLE BILL."

The Hereford Bull, of which we give a portrait taken from the "Agricultural Gazette," is owned by an English breeder, Mr. E. J. Lewis, of Breinton. This bull, named "Little Bill," took the second prize at the Herefordshire Agricultural Society's meeting. The portrait is copied from a photograph, and therefore is a faithful representation of what the animal really is. The breed is noted for the excellence of its flesh, in which the fat and lean are intermingled, and not placed so much in layers, as in the fat Shorthorn. There is a smoothness and roundness about the carcass, which is well shown by this portrait, and which indicates profitable cutting up, with little waste or offal. The cows are generally good milkers, and yield good butter, and the calves are hardy and grow rapidly, when properly cared for. The regularity of color and form is very close in this breed, and a well-bred herd will differ very little in their markings. The white face is the most distinguishable feature.

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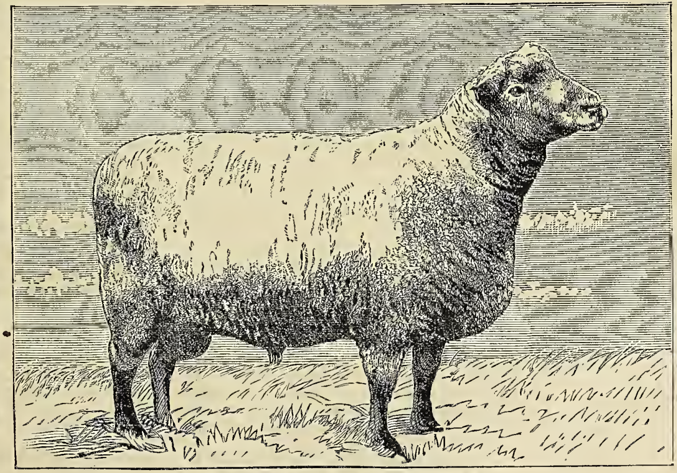
Oxford-Down Sheep.

The Oxford-Down ram, whose portrait, copied from a photograph, is given on this page, has a history that is interesting to American readers. The ram is the "Royal Liverpool," and the first-prize animal in his class at the Royal Agricultural Society's show at Bath. This ram, with three others, all the property of Mr. Treadwell, of Winchendon, England, are the progeny of the ram "Freeland," also owned by Mr. Treadwell. "Freeland" is now in the possession (although not the property) of Mr. T. S. Cooper, of Coopersburg, Pa., Mr. Cooper having rented the ram for the coming season from Mr. Treadwell, for the sum of 85 guineas, or nearly $450. This ram has received many first prizes, and his offspring have also been successful prize-winners. For the four rams above referred to, Mr. Cooper offered $2,000, which their owner declined. This fact indicates the value placed upon these animals in England, where the Oxford-Down has become very popular. In this country it is rapidly becoming a favorite sheep, occupying a place midway between the short and long wools, as regards fleece, and an equal one at least as regards mutton, with the Cotswold. In some respects the mutton is preferable to that of the Cotswold. Mr. Cooper, who has the ram "Freeland" now in his possession, is one of our most enterprising breeders, and has imported some of the best stock now in this country. In procuring the best possible Oxford-Downs, he is doing this excellent breed only fair justice, for although it has already made a good start here, and several good flocks are now owned in the country, yet there is room for some of the best blood to keep up the standard of quality, if not to advance it.



OXFORD-DOWN RAM, "ROYAL LIVERPOOL."

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The Production and Disposal of Eggs.—An egg contains more nutriment than any other substance of the same weight. At the same time, the market price of eggs is comparatively lower than that of flesh. A pound of eggs is also produced at a less cost than a pound of flesh. Considering the importance of the poultry products of the country, there is by no means sufficient regard paid to them. The stock of profitably productive poultry, as compared with the whole quantity kept, is small. As compared with the whole, the number of hens that produce 100 eggs in a season, is small in proportion. Yet 150 eggs are frequently laid in a year by hens of the improved breeds, and by common hens that are well fed and kept. The preparation of eggs by a recent invention for drying or, as it is called, "crystalizing" them, a process in which the work is done by machinery, has very largely increased the market for them. The dry product is imperishable, and, when packed in tin boxes, may be shipped to the most distant countries, or carried on ships through the longest voyages. No doubt this new use for eggs will increase the demand for them when the manufacture has become thoroughly established, and that it will be a profitable business for farmers to keep better poultry and improve, so far as possible, their present methods of keeping their fowls. Suggestions to this end will be found every month in the *American Agriculturist.*

Among the Farmers.—No. 22.

BY ONE OF THEM.

Green Manure Crops.

When I first went to farming on these gravel hills, the subject of green manuring was considered, and has constantly come up; but I have never been "forehanded" enough, or have never had the moral courage, perhaps, to plow in a good crop of clover after there was a show of a good crop to cut; and to tell the truth, my only green manuring has been worn-out sod, a crop of rag-weed, or self-sowed oats. I have followed my old fogy neighbors in this matter, though a thorough advocate of systematic green manuring as the cheapest and most rapid way of bringing up worn out or poor soils.

Earth and air, and sunshine, contribute and combine to furnish fertility—manure—evenly distributed, at no greater cost than it would be to cart it from a compost heap in the same lot and spread it. That is, at the cost of plowing and harrowing, and possibly rolling flat after the crop is grown. Then it is to be plowed under, of course, like any other manure. Whatever fertilizer is used to quicken the crop, may be regarded as an application by itself, for none of it is lost, but it benefits the succeeding crop just as much as if it were especially applied to it, and does the other service into the bargain. The crop to be selected depends on the land and its condition, as well as the crop to be produced. Hereabouts we want to keep the land in grass so long as it will grow good crops of hay, and this is really the object, end, and aim of all our farming operations. We turn under a sod, manuring well, and plant corn, follow it with potatoes, and rye or oats, seeding down to grass. Our grass crop holds the ground for three to five years, according to the seasons, and how it is treated. A little summer top-dressing pieces it along a year or two, but it must needs be taken up again before long, and so the potatoes and turnips, small grain and corn, are uniform *incidentals*, which indeed we could not do without, but which are nevertheless entirely secondary to the hay crop.

The Southern Cow Peas.

This crop is one of which we get our knowledge from the Southern States. There it is used as a green manure crop, as a green forage crop, and as hay; for either purpose it is said to be admirable. Cattle eat it freely, and it produces a tremendous yield of fodder. Certain it is that the amount of green material produced on an acre is amazing. The cow pea is, so far as a layman can judge, no pea, but a bean. [See *American Agriculturist* for April, 1876, for description.—ED.]

I was indebted to Mr. J. M. Gleason, the well-informed seedsman at R. H. Allen & Co.'s, for the intelligence that several acres of the variety known as "Clay Pea" had been grown in Monmouth Co., N. J., and that they were nearly ready to be plowed under. We planned to visit the farm together, and it certainly was a very interesting and instructive excursion. On approaching the farm we encountered one field. There may have been 7 or 8 acres in it, and the peas covered the field, so that the ground could not be seen, nor the faintest color of it, even where the plants were most erect. Where they were lodged, as most of them were, they formed a dense mat one or two feet thick. No sunlight could penetrate to warm the soil, not a weed could start, and as a fallow crop and weed killer, I can hardly imagine any thing superior.

It seemed to us a serious undertaking to get such a crop under ground, but our host made light of it, and we were glad on his account, at least, that he could enjoy the rapid growth and immense bulk of green manure, daily and hourly accumulating upon his soil, without that bugbear before him. The plan was to roll it down as flat as possible, and then plow it under with a chain. Of course a very sharp coulter is needed, and a revolving coulter, which may be made to take a sharp edge, will not do, for the vines are so tough that the revolving coulter rolls up on them, and brings the plow out of the ground. I was unable to go down to see them plowed under, but learn it was not so easily accomplished as was supposed. Still under it went, and with power enough before the plow, and a good heavy chain to drag the tops under the furrow slice, as it is thrown off from the mold-board, an immense mass of vegetation can be buried.

The ground on which this green crop was raised, had been cropped for years with potatoes; then seeded down with some grain crop, and for several years had lain in grass. The sod had become very poor, and in spots utterly gone. No manure had been added, the sward simply turned under, and the peas put in with the "Farmer's Favorite" drill.

Cow Peas at the South,

are regarded as a crop little dependent upon moisture. No doubt seasons favorable for growth are an advantage. This summer the ground has not become dry a single time. Every few days powerful showers fell, and all vegetation fairly jumped. However, our friend, who has used Cow Peas for years at the South, says he has repeatedly seen a heavier crop. Green or dry, cattle and sheep are fond of it and thrive upon it. It affords the Southern farmer almost absolute protection against the grasses which fill and almost make a sward as soon as he has laid by his corn crop—that is, as soon as he can no longer use the plow and cultivator. At the last going over the peas are sown, and worked in with the plow, cultivator, or hoe, and the corn "laid by." At harvesting time, the corn is topped, the fodder gathered, and finally the ears plucked; the peas meanwhile being trampled down by men and beasts. Still they thrive, and afford a good manuring for the following wheat or other crops.

The only notice I can find of this plant in any book, is a brief reference to it in "Allen's New American Farm Book," a book, by the way, to which one need rarely go in vain,—here it is said to be particularly adapted to clay soils, but requires one dry and mellow. It will not ripen seed economically in this latitude, but requires the longer season of Virginia. I learn from Mr. Gleason, that there are a large number of varieties, and among these many distinguishable from one another by the form and peculiar markings of the beans themselves. One of the earliest kinds used is the "Whippoorwill," a favorite variety in South Carolina, and named from the beans (or peas) being marked very much like the bird of that name.

On this fine farm one might almost imagine himself in the fabled

Horse Kingdom of Gulliver,

for certainly the horses were the lords, and men were their servants, as much as among the Houyhnhms—everything was subservient to the horse interest, and the sleek and graceful thoroughbreds certainly gave their generous owner the best reward they could, by thrifty growth and superb development, and by the numerous and ever increasing number of cups and purses won at the races. Now timothy is essential to horses. The timothy sod needs to be frequently renewed to produce hay of the best quality. Corn is therefore a necessity as the best breaking up crop. Cows are needed to eat the cornstalks and convert them into manure. Rye follows the corn, and pigs and cows consume this with the corn, hence pigs are a necessity, and besides, they consume the milk. No oats that this farm can produce are good enough for these horses, hence those from a moister climate are procured. They must weigh not less than 35, preferably 40 lbs. to the bushel. Had the owner known what a season we were going to have, he might have raised his own oats—mine are as plump as barley. The horses are all kept in loose boxes, on the ground. The manure is cleared away daily, and the earth floors removed and renewed as often as need be. The cows are kept under the hay barn, where there is a manure cellar, deep and lofty, ventilated and lighted on all sides. They are foddered in racks, and are expected to consume and convert into manure all the corn-fodder, and work over the horse manure, which is spread under them.

The cows were at pasture, and only brought up to be milked, so we did not see how they got along in their rather unattractive quarters. Whether the unattractiveness is only imaginary, or whether there is any positive evil effect upon the cows from standing in and treading down this mixture of manure and litter, I do not know. This much is certain, they are vastly better off than the

Cows in Most Country Barn-Yards,

lying in their own filth, poaching up the mire and muck, into which they sink knee deep, and at times almost wallow; their flanks and sides loaded with dung-like scale armor one or two inches thick, and even their udders only free from it in case they are milked by a person of more than ordinary neatness. That is surely no over-drawn picture; but precisely what we may and do see all winter long on common farms the country through. The differences between these practices and

Dr. C. R. Agnew's System,

is noteworthy, and I am led to speak of it because, theoretically, it is so different from that of our friend, who despises cows, and pets thoroughbred horses, in old Monmouth. Dr. A. lives upon the crest of the Palisades in Rockland Co., overlooking from the south that beautiful expanse of the Hudson called Tappan Zee. He delights in a choice herd of beautiful Jerseys. All of them are pets, all are friendly, gentle creatures, fawn-like and delicate in look and temper. They are stabled at one side of a paddock of several acres, including an apple orchard. The time honored barn-yard is abolished. During the grazing season they are housed only while milked or during storms. In the winter they are stabled as usual. The manure is removed from behind the cows several times daily, and once a day the cart comes along and all the manure is thrown into it and taken away to a compost heap, out of sight and out of smell of the stables. The Doctor claims that his cows enjoy perfect health, and always have done so, that they are free from even the ordinary ailments—colds and fevers—as well as from those of dangerous character, and that they always have been, ever since he adopted the system of removing their droppings, and keeping them constantly in a sweet and pure atmosphere. He claims too that the milk is purer, and the butter better flavored, and in this he certainly is right. I do not know that I can attribute his exemption from disease altogether to this cause, for I have an old-fashioned barn-yard, not always of the sweetest, and my cows are never sick, and never have been, barring now and then a touch of garget, and once a wrong presentation at calving. In discussing the subject, Dr. A. uses the *argumentum ad hominum*, saying, "would there be any doubt in your own mind, whether it would be healthy or not to live surrounded by excrementitious substances, or even within smelling distance of them?"—"The cow has as much an artificial nature as has man, and ought to be guarded in the same manner from causes of disease."

I do not think the racing-farm system so objectionable. The manure is solidly packed by the feet of the cattle, there is little fermentation, it daily receives additions of dry material, and the cows are kept perfectly clean. On the south side of the pit the large windows are always more or less open. The amount of litter, rye straw, with the horse manure, is very large, so that were it not that the cattle pack the mass so thoroughly, it would be necessary to wet it occasionally, or it would heat. As it is, no odor of ammonia has ever been perceived, and the manure which comes out in the spring is of excellent quality. Our friend disclaims any originality in his plan, but says that it is practised in Denmark and Austria, and it is, in fact, not unlike the covered cattle yards now common in England.

There was much besides on this Monmouth farm that interested me, and with which I might fill half a dozen such letters. The marl pits, the broad fields of corn, and rye, and carrots. The superb horses and breeding mares with their foals, the race horses, gaunt and greyhound-like. The level race course, and many other things. Besides there is a new and well arranged pig-house, some nice Berkshires, and some Poland Chinas, looking much like Berkshires. There is, however, one thing,

The Hay Barn,

on which I must dwell a moment. How large it is I can not say, for I made no memoranda, but I should say 60x100. The roof rests upon the plates with no central supports, leaving the whole floor unobstructed by posts, so that wagons when driven in may go to any part of the building, and there deposit their load of hay. Horse-forks are used to elevate the hay in making mows, and ventilation is secured by making all sides of the barn serve as ventilators. Thus, the side walls are 10 inches thick, 2-inch plank being used as joists. Upon these the clap-boards are nailed on the outside, and inside 1 x 2-inch laths are nailed about a foot apart, horizontally, all around, and from floor to eaves. A contrivance well worthy of imitation.

One Thing about the Carrots is worthy of notice. It is a fact that the heaviest and best carrot seed is sowed the first year in good soil, producing plants which, if they have an especially favorable season of growth, often seem to revert to a semi-wild habit, and throw up a flower-stalk, bloom, and bear seed the first season. The same seed, if kept another year, will produce solid good roots, with no tendency to run to seed. This is not generally known. A good seedsman will rarely trust carrot seed over two years old, and this running to seed so rarely occurs, that the best sell carrot seed habitually the season after it was grown. The carrots on this farm looked finely, so clean and thrifty—scarcely a weed to be seen—yet they had this trouble, many were going to seed, and the mystery could not be solved except by casting blame upon the seed grower. The conclusive test of the excellence of this very seed, would be the fact that the same seed would do well, and show none of this tendency, if tried another year.

Talks on Farm Crops.—No. 9.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"A. E. M. C.," of Pa., reminds me that some years ago I said something in the *American Agriculturist* about sowing rape. He wants to know if I found it a profitable crop. Taking everything into consideration, I thought it a decidedly useful crop, and some others who tried it, reported favorably.

Mr. C. also asks, if it "is good for soiling cattle?"—I should think not.

"Is it good," he asks, "to plow under as a green manure for vegetables?"—For this purpose white mustard would be better.

The chief value of rape consists in its hardiness. It will stand frost better than any other green crop I have ever grown. I raised it solely for the purpose of affording my Cotswold sheep a bite of green food in winter. I wanted to give them exercise. The rape was sown in July. The crop kept on growing until winter set in. The frost did not hurt it, and we let the sheep pasture on it all winter. We did not have very much snow, and the sheep pawed the snow away, and managed to get at the rape. There were very few days during the winter that the sheep did not, of their own accord, walk to the rape field, and remain until three or four o'clock in the afternoon, when they came back to the barn. The exercise and the green food were just what the breeding ewes needed to keep them healthy. We had unusually strong lambs in the spring. The sheep were foddered twice a day with straw and corn-stalks, and a little bran or grain.

In the more southern sections of the country, I I should think rape might be grown to advantage for winter pasturage, but at the North I doubt whether it will be generally profitable. If it was not for affording the sheep fresh air and exercise, I should not grow it. Corn fodder will furnish much more nutriment per acre, and mangel wurzel will give us all the green food the sheep require.

Mangel wurzel will be the great root crop of the United States. It will stand our hot summers better than Swedish turnips, and, if the land is rich enough, will produce a far larger amount of nutriment per acre. Mangels will keep longer, and become more valuable the longer they are kept; they are worth more in April and May, than in the winter.

"You mean by that," said the Doctor, "that you can use them at that time to better advantage."

"Not only that," said I, "but the mangels themselves are more nutritious. They contain less water, and more sugar, as they become 'riper.' By keeping them in a warm cellar, you can ripen them in January and February, but if pitted in the field, or kept in a very cool cellar, they are not in their prime before the middle of March. And at this time they are of great value for ewes and lambs, or for milch cows, or breeding sows."

"No doubt they are valuable," said the Deacon, "the trouble is to grow them. My seed this year did not more than half come up, and I have a thin crop—but what I have are good. I sometimes think it would pay to raise them merely for their leaves. There is nothing my little pigs like better."

The great mistake we all make in raising mangels is in not getting the land ready the fall previous. We ought to plow the land in August, and again in September or October, and between the plowings harrow and cultivate, to kill surface weeds. If the land is a strong loam, I would, in this climate, apply the manure in the fall, the earlier the better, and work it thoroughly into the soil, and in November I would plow the land, and get it all ready for planting in the spring—of course, doing the work only when the land was dry.

Had I adopted this plan last fall, it would have been several hundred dollars in my pocket. I plowed my land last fall, but did not manure it, and this spring I had to plow it, and then ridge it, and spread the manure in the ridges, and cover them. Our springs are too short for this kind of work. I did not—and could not—get at the mangel land, until we were through sowing barley and planting potatoes and corn, and when we got ready to plant the mangels, the ground was so dry that much of the seed failed to germinate. The longer I farm, the more I am satisfied that we must prepare our land for spring crops in the fall.

"When I was in England," said the Doctor, "I asked an intelligent farmer, what he considered the greatest improvement that had taken place in English agriculture during the last half century. He replied, 'the steam scarifier, and the use of artificial manures.' He did not think steam was so much cheaper than horses, but it did the work quicker and better. As soon as a crop was off, the stubble could be scarified, or, as we would say, cultivated. The light lands could be sown to late turnips, or rape, or mustard, and the heavy lands could be worked and got ready for spring crops. 'Autumnal cultivation,' he said, 'had done great things for English agriculture. That and the use of artificial fertilizers had greatly increased the production of root crops—and the more roots, the more stock; the more stock, the more manure; and the more manure, the more grain.' "

"And yet," said I, "there is not half the necessity for autumnal cultivation in England, as there is here. Our autumns are longer, and drier, than in England, and the land in better condition to work. And our springs are later and shorter, and if we get only a few days behind with our work, a drouth sets in, and we lose half our crop."

On sod land, if the soil is tolerably clean, and rather light, it may be better, for corn, late potatoes, beans, and fodder-corn, not to plow the land until the spring. There are days, after heavy rain, when we can not get on to the plowed land, but when we can plow on sod, and by so doing we lose no time. Some good farmers, however, prefer not to plow until just before they are ready for planting. Be this as it may, there is no special hurry in getting the land plowed for corn, potatoes, etc. But for spring wheat, oats, barley, early potatoes, and mangel wurzel, the rule should be, to plow as much as possible in the fall, as any delay in the spring may make a serious difference in the yield.

The two most satisfactory crops on my farm this year have been corn-fodder and late planted potatoes. I had a piece of one-year-old clover that I pastured until the middle of June. There were more weeds in the lot than clover plants, and I was heartily ashamed of the field. But I was short of pasture, and could not spare it until the middle of June. We then plowed this field. It was dry and hard, and needed a strong three-horse plow with a strong point, to do the work. But I have always thought that, if you *can* break up land during a drouth, and can pulverize it, one such plowing is worth two plowings, when the ground is moist enough to work easily. After plowing we rolled the field, and followed with a heavy pair of three-horse harrows, and then rolled the rougher parts again, and following with a harrow, until the field was reduced to powder. We then (June 15) drilled in half the piece with about three bushels of corn per acre for fodder, in rows 35 inches apart, and the other half was planted with Late Rose potatoes. The corn-fodder was cultivated two or three times, and though sown so late, it grew rapidly, and by the middle of August it completely covered the ground. The stalks were fine and sweet, and we had at least a ton and a half of cured fodder, worth as much as the best hay. The potatoes were equally satisfactory. There was a good, fair crop, and the land in both cases was clean and mellow.

Another crop, which has turned out so well that I propose hereafter to plant it largely, is cabbage. It has this advantage over mangel-wurzels. If there should be a good demand for cabbages in market, you can sell at a price that brings in a large return, per acre, while if there is no demand, you can find greedy customers at home. The cows, sheep, and pigs will be grateful for all you have to spare.

"Your best crop this year," said the Deacon, who has just come in, "and the only one that affords any real profit, is your apple crop. Your corn is all fed out on the farm; so is the corn-fodder and mangel-wurzels and hay. You have ten acres of potatoes, but they are cheap. You had 33 acres of barley, but that will bring but little."

"If so, Deacon," I said, "it cost comparatively little. There is no crop on the farm that requires so little labor as barley. It requires rich, dry land, and brings a relatively high price. And this for the simple reason that good four-rowed barley can only be grown on the best of land. I sowed wheat after the barley, and the two crops afford a fair profit."

"But look," said the Deacon, "at the labor and manure you expended on the land last year, and the year before, for mangels."

"True, Deacon," said I, "but the mangels do not use up all the manure. Last year, after the mangels, I had 136 bushels of Early Vermont potatoes, per acre, and sold them for $1.25 to $1.50 per bushel, and the barley, this year, after the potatoes, was about as good a crop as is often grown. And so, even admitting that the mangels themselves do not bring in any money, and that they require considerable labor and manure, their general effect on the farm is good—and, in short, they *pay*.

And corn-fodder will pay and cabbages will pay. They enable us to keep more stock and to make more manure. It looks now as though we should get a good price for our grain another season, and I think we shall do well to sow and plant largely. At the same time the prospects for the stock raiser are no less encouraging. The fact that we can ship fresh beef, and mutton, and pork, and poultry to Europe, will have a great influence on our system of farming. It will give us a steadier market for live stock, and better prices for improved stock. We shall be able to feed better, and to raise better feed we must farm better and manure more. It looks now as though for the remainder of this century, America is destined to be the great *meat producing* country of the world. And in talking about farm crops this fact must be borne in mind. We shall use, especially in the Eastern, Middle, and Southern States, a large amount of artificial manures, and they will be used more and more for growing crops to be fed out on the farm. The supply of good beef and good mutton, will come from the cultivated and well farmed sections of the country. The meat eating people of the world are increasing with marvelous rapidity, and they will not be fed on game or semi-wild animals that have to use the food they eat in summer to store up fat to keep them alive in winter. It requires an enormous amount of grass to produce a five-year-old buffalo, and not much less to produce a thousand-pound Texan steer. We must have improved animals, and improved modes of feeding. We must supply our animals with abundance of nutritious and easily digested food, winter and summer, and this can only be done in the cultivated sections of the country, and by improved methods of farming. Let us be encouraged to push forward the good work with vigor. Let us underdrain, let us kill weeds, let us manure, and let us raise larger crops, and feed out a greater proportion on the farm. This is to be the improved American agriculture of the future. We could hope for no better prospect.

The details of the system will depend on circumstances, and may well be left to the intelligence of our thinking, working farmers. All that is needed is a conviction that improved farming will pay—and I think we need have no doubt on that point.

Hints and Helps for Farmers.

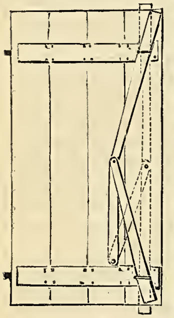


Fig. 1.—FASTENING.

Fastening for Swinging Doors.—L. M. St. John, Canajoharie, N. Y., sends the sketch of a fastening for a swinging barn-door, shown at fig. 1. The center-bar is made of a piece of hard wood, 1½ inch thick, and 3 inches wide at the ends, tapering gradually from the ends to the central part of the door. They are made to slip loosely through iron staples on each batten of the door, and are joined together by halving the ends, and putting a bolt through them, and also through the narrow end of the guide which lies beneath them. The latter is fastened to the door, as shown in the engraving, by a rivet or screw which permits it to play back and forth. When the central points of the bars and the guide are pushed to the right or left, the ends of the bars are made to project beyond the door, and engage with the straps or mortises made to receive them. The bars are then firmly held in place by the guide, as shown by the dotted lines. The advantages of this fastening are that it is always in place; is easily opened and shut, and when frozen fast at the bottom, the power of the toggle-joint easily loosens and draws the end. The door is also fastened at the strongest place, and cannot spring open; the bar will hold without slipping, although the mortises should become worn, and although it should be but slightly caught, because the guide holds it rigidly. The ends, too, are entirely out of the way when the door is opened, and if it should blow to, they will not drop of themselves.

Fig. 2.—PIG-TROUGH.

An Iron Pig-trough.—In looking over a catalogue of the New York Plow Company, we find an iron pig-trough mentioned. Having some time ago used similar iron troughs, we found them very durable, and very cleanly, and far preferable to wooden ones of any kind. The trough referred to is shown at figure 2, and can be procured at a cheap enough rate to make them generally used.

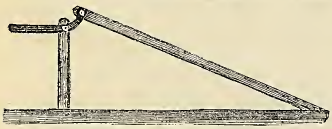


Fig. 3.—WAGON-JACK—DOWN.

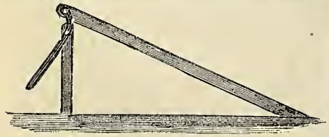


Fig. 4.—WAGON-JACK—RAISED.

An Improved Wagon-jack.—A reader of the *American Agriculturist* sends a drawing of a wagon-jack, which speaks for itself. It is shown at figure 3, as down, and at fig. 4 as raised. As seen by its structure, the weight is thrown over the center of the pin, or pivot, so that the jack can not come back, and no fastening for the handle is necessary.

A Case for Carrying or Keeping Eggs.

Eggs are the most fragile of things, and to be carried or even stored safely, they need to be packed in the most careful manner. Many devices have been used for this purpose, but although some of them have been found available for business purposes, none of them have been adapted to domestic uses for the storage of eggs. A "Safety Egg-carrier," devised and patented by A. R. Sprout, of Lycoming Co., Pa., here illustrated, seems to meet both of these requirements in the most effective manner. Figure 1 shows the box, with the trays, of which it contains eight, and holds altogether 36 dozen eggs. The eggs are held in place by means of pins inserted in the bottom of each tray, and forming a circular supporting wall around each egg, as shown at figure 2. Some soft material is wound around each pin, forming an elastic padding by which the eggs are held firmly and securely. The trays, when filled, are placed in the package, one above the other, the bottom of one forming the cover of the one below it; the lid of the box holds all tightly in place. Small holes are bored through the bottom of each tray, the small end of each egg rests, and is thus held in the position, which is the best for long and safe keeping. Each tray of eggs may be inspected at any time, by holding it to the light to determine their soundness. For household use, each tray forms an independent receptacle for eggs; the package or box being provided only for the purpose of the shipper or dealer.

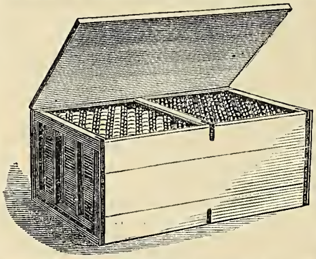


Fig. 1.—EGG CARRIER COMPLETE.

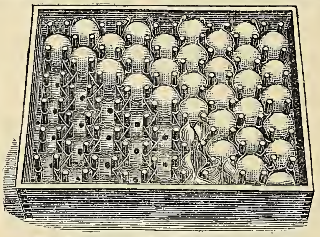


Fig. 2.—SINGLE TRAY OF EGG CARRIER.

Stove for a Poultry-House.

A simple and safe method of warming a poultry-house in winter, is as follows. With a few bricks and common mortar, build up a wall in the shape of an oblong rectangle, twice as long as it is wide, leaving an open space in the front about a foot wide and the same in hight. Lay upon this wall, when 18 inches high, so as to cover the space within the wall except about 6 inches at the further end, a piece of sheet-iron. Build up the wall over the iron another foot, and then build in another sheet of iron, covering the space enclosed all but a few inches at the front. Then turn an arch over the top, and leave a hole at the end for a stove-pipe. The stove thus made will appear as at figure 1, and a section of it as at figure 2. A small fire made in the bottom at the front, will then heat this stove very moderately, the heat passing back and forth, as shown by the arrows, will warm the whole just sufficient to make the fowls comfortable, and there will be no danger of injury to their feet by flying up upon the top, as it will never be hot if a moderate fire only is kept. The stove will be perfectly safe, and may be closed by a few loose bricks laid up in front, through which sufficient air will pass to keep the fire burning slowly. Ordinarily a fire need only be made at night during the coldest weather.

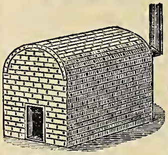


Fig. 1.—STOVE.

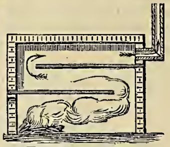


Fig. 2.—SECTION.

How to Build a Boat-house.

Having in former numbers described different kinds of boats, we now comply with several requests and describe a house in which to safely keep a boat. Any kind of a house that is large enough may be used, if provided with the needed fittings named below. Where the level of the water is liable to little change, the house need not be raised much above the surface of the water, but the floor may be make so low that one can easily step out of the boat to the floor. Of course there should be a channel made in the center of the house, deep enough to float the boat when loaded. The plan of the floor is shown at figure 1, with the boat in the center. The floor should be protected by a light railing around it, (see fig. 2), to prevent accidents from slipping when the floor is wet. Where the water level changes, the house should be raised on posts, or bents, as may be necessary to keep it above high water. A hanging ladder, that may be drawn up, is provided for use at low water.

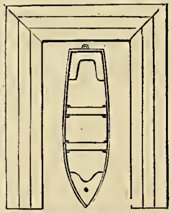


Fig. 1.—PLAN OF HOUSE.

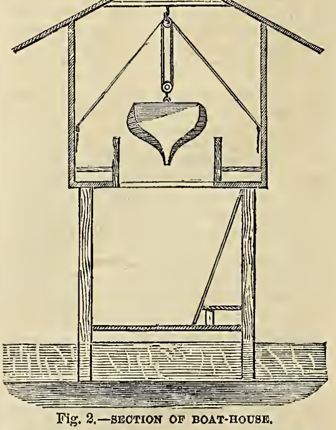


Fig. 2.—SECTION OF BOAT-HOUSE.

The ladder rests at the bottom against a small foot-stage. At figure 2 the house is shown in section, with the boat drawn up and hanging. The boat is raised by means of ropes and tackles, one for each end; and as the boat is hoisted up, the ends of the rope are fastened to ring-bolts or cleats on the wall. It is easy to raise a boat in this manner by hoisting one end a few feet, and then the other end, making fast each time, until the boat is high enough.

An Ice-house in the Barn.

Many farmers fail to put up ice because they think an ice-house to be too costly for them. We here give a hint which we received from a neighboring farmer, some years ago, as to putting up ice in a corner of the barn, without anything more than a few boards and some sawdust. The coolest corner of the barn is set apart for the ice, and a board is nailed to the floor on each side of the corner, or across it, one of these should be just beneath a beam of the upper floor. Some rough boards are tacked to the posts of the barn wall, up to near the top. A batten is then nailed to the floor, one inch from the board; this makes the foundation of which the ground plan is as shown at figure 1. If necessary, a board is nailed up to the beams above, for the purpose soon to be described. The spaces, *a*, *a*, are filled with sawdust. The ice is then packed in the space, bounded by the dotted lines, placing a foot of sawdust beneath it, and as it is put in, sawdust is packed around it. The sawdust is kept in at the sides, *b* and *c*, by upright boards placed against those nailed to the floor and a beam above it, or the board nailed to the beams before mentioned. These boards are thus kept in their place. When all the ice is in, it is well covered on the top, a space for a door being left in the boarding above the ice. Then a second row of boards is placed between the boards on the floor and the battens, and fastened as may be convenient, a door space being made to match the inner one. The space between these boards may be filled with cut straw, sawdust, clover-chaff, or any other non-conducting material, up to the hight of the ice within. There is no need to close the door space; it will be better to leave that open for ventilation. Figure 2 shows the outside of this ice-room as it appears from the barn floor. Such a place as this may be easily arranged in many barns; our neighbor thus kept an ample supply of ice every season without losing by waste more than is usual in the best built ice-houses.

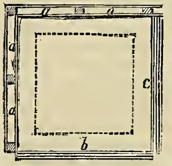


Fig. 1. PLAN OF ICE-HOUSE.

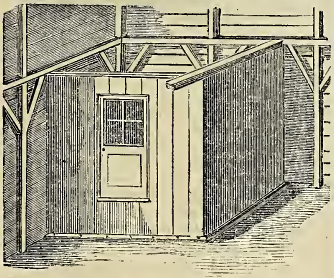


Fig. 2.—VIEW OF ICE-HOUSE IN BARN.

Growing the White Birch on poor Land.

As an instance of the profitable culture of poor lands, the business of growing white birch for the manufacture of thread spools, may be given. Birch timber is cut for this purpose when young, so that a plantation sometimes may not require more than four or five years to become profitable. Steep hill-sides, cold bleak mountain lands, or sandy valleys, will produce this timber. It is stated that the business of exporting white birch timber from an Eastern State to Great Britain for this manufacture, has already begun. If there is a demand for it, we can supply all that is needed. But the strangest thing is, that we should ship abroad from New England a bulky raw material like this, instead of the finished article, upon which the difference in freight only would give a good margin for profit. There are thousands of picturesque valleys in New England, and elsewhere, upon the sides of which millions of birch trees may be grown, and down whose centers flow rapid streams that would furnish power to drive the saws and lathes required to manufacture the trees into spools. It will not be many years before this will be added to the many other American industries, and we may supply the world not only with thread spools, but with bobbins for spinning frames, and other kinds as well.

Plan of a Dairy Barn.

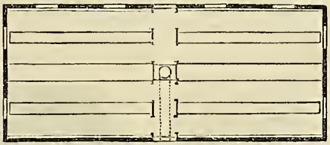


Fig. 1.—PLAN OF DAIRY BARN.

A cow barn that can be easily extended as the herd may be enlarged, will be found very convenient by many. The size of a herd is frequently restricted by the accommodations afforded by the barn, and when an increase might otherwise be desirable, it is found objectionable on this account. It is not always possible to pull down one's barns to build larger, but when it is possible to add to them at either end, increased room can be gained with but little outlay. We herewith illustrate a dairy barn that can be extended to any desirable limits without changing the plan. In these days of steam, and all sorts of machinery, there is no difficulty in using long narrow buildings, for, with the hay-fork and the hay-carrier, the forage can easily be stored in the longest barn and dropped wherever it is desired, without trouble, and by using a tram-road and light feed-cars, 300 cows can be fed from a central feed-room as easy as 30 can be fed in the old-fashioned manner. Figure 1 is the plan of a cow barn that will be found as convenient for a small herd of 20 or 30 cows, as for one of ten times that number. The building may be 24 or 42 feet wide. The plan shown is 42 feet in width, and accommodates two double rows of cows. If room for only one double row is desired, 24 feet will be amply wide. In the plan, there is a central passage for feeding, 6 feet wide, with a tram road-way laid down in it. On each side of this, are the double rows of stalls, with a feed-trough for each. The floors on which the cows stand are 7 feet wide, which gives room for a gutter behind each row, and for a four foot wide feed-trough, divided lengthwise into two, each part being two feet wide, by a sufficiently high partition. The feed is easily thrown into these troughs from the central passage, along which the feed-car can be drawn by a small horse, or be pushed by a man. A turn-table is provided in the center of the passage, to admit of a car being brought from the wash-house in the rear with empty milk-cans, or to the milk-house with the full ones after milking. The door-ways are made very capacious, and the doors are double; the door-ways may be left open during the summer, the doors being fastened back against the wall. The upper floor is kept for hay, fodder, and feed; these being ranged at each end, leaving the center open and free for cutting and mixing the feed. Here should be a fodder-cutter and a large mixing box, in the side of which should be a spout to carry the feed to the car on the floor below. If the food is steamed, the boiler can be kept in a rear building, not shown on the plan, the steam being carried to an engine, which would work the fodder-cutter, and the steamer, both on the upper floor. This would be preferable to having the boiler in the main building, and would avoid much risk from fire. At figure 2 is shown the elevation of the building. The central door above is for the admission of feed to the bins; a door is provided at each end for unloading fodder, a hay-fork and a hay-carrier being used for the unloading. There should be ample ventilation provided by means of shafts, as shown, and these can also be utilized for dropping hay to the floor beneath. The plan here given will admit of much modification; it is thus broadly outlined to meet the wishes of many correspondents who desire this information. It is hardly possible for one plan to meet all cases; but this will be found sufficiently suggestive and clear, we hope, to satisfy those who wish for a similar plan. When an extension is desired, it is only necessary to add a bent or two at each end, carry out the roof and floor, and remove the ends.

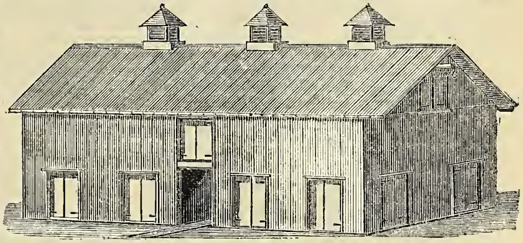


Fig. 2.—VIEW OF DAIRY BARN.

A Dairy Ice-House.

The rapidly extending use of the cold system of setting milk, heretofore described, will create a necessity for convenient and compact dairy rooms, with well and ice-chamber for use in the summer

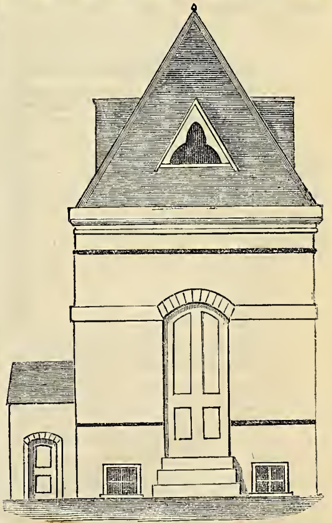


Fig. 1. FRONT ELEVATION OF DAIRY AND ICE HOUSE.

time. A combined dairy and ice-house, which the writer is now laying out, in which the Cooley creamery is used, is arranged as follows. Fortunately the water-supply is provided by a never-failing well, which flows over the top, and from which a steady stream, filling a two-inch pipe, flows away. The dairy is partly underground, for the purpose of maintaining an equable temperature, and for the convenience of using the flow from the well. The part above ground is shown in the elevation, at figure 1, and the ground plan at figure 2. It is of red Croton brick, with a band course and arch over the door of yellow brick, and two band courses of black brick, as indicated in the engraving. This peculiar style is adopted to match a brick-house near by, but common brick would answer ordinary purposes, or the building might be of wood or stone. This upper part is the ice-house. A porch on the north side covers steps to the milk room below, which is lighted by two windows on the west side. The plan of the milk room is shown at figure 3. It is large enough to contain several of the creameries; the feeding-pipe, which conveys water to these, is shown at *a*, *a*, and the outlet to the drain for the overflow is seen at *b*. The floor and sides of the dairy are of concrete, covered with cement, and a drain beneath the floor keeps the building dry. If ice should at any time be needed to produce a very low temperature, it will be brought from the ice-room above, but with a stream of water at 45 degrees, ice may be dispensed with.

In cases where there is no ample supply of cold water naturally flowing, it would be necessary to employ a windmill. But there are many localities, where a steady stream may be procured by digging a deep drain on sloping ground, to supply a dairy built on the lower part of the slope. Otherwise, with such an arrangement of ice and dairy room, the creamery may be supplied with water by hand from a pump, and cooled with ice. In this way the consumption of water would be small, only sufficient being needed to keep that in the tank fresh. After considerable thought and calculation, as to floor of the ice-house, it was found that a floor of oak, covered with sheet-zinc, turned up a foot on the walls, and the walls covered with hydraulic cement, would be the cheapest and most durable; a leaden trapped pipe from the zinc-floor, drains the drip from the melting of the ice into the creamery.

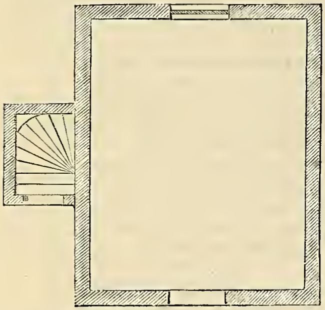


Fig. 2.—PLAN OF ICE-HOUSE.

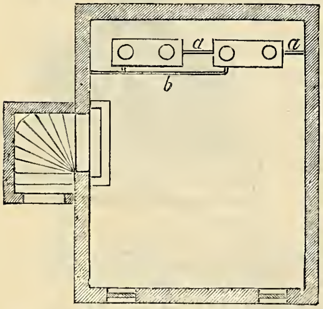


Fig. 3.—PLAN OF DAIRY.

Storing Sweet Potatoes.

Sweet potatoes are difficult to store in large bulk, unless careful precautions are used. They must not be exposed to a temperature lower than 60 degrees; and as they must be kept dry and well ventilated, must not be piled in large quantities. The most convenient place to store them is a house so arranged, that they can be guarded against accidents of temperature, and be always accessible. A plan of such a house is shown in figure 1, and the elevation in figure 2. It may be made of any convenient form or size, but a square is most economical of space. For the Southern States, where fire-heat is not needed to keep up the proper temperature, a one-story building will do; but in the north, it should be of two stories, with perfect ventilation, the upper floor made of slats, placed an inch apart, upon which the roots are to be stored, and a stove should be provided below. The lower room may be used as a store-house, a tool-house, or a work-room. The upper floor, if of two stories, or the main floor, if but one, should be arranged as follows: a passage-way, running through the building, has a door at each end, to be opened when desirable, to air the house. The floor on each side of the passage is divided into bins by slatted partitions; these are double, as shown in figure 1, to give thorough ventilation, by keeping the potatoes in masses of not over 60 to 100 bushels in each bin, with air-spaces all around them. The same precaution as to air-spaces, is observed with the end partitions, by keeping the slatted sides of the bins one inch from the walls. The lower parts of the walls of the one-story house are also slatted, as shown in figure 2, but doors are provided to cover these, which may be made to either slide up or raise up on hinges, as seen in the engraving. The hinged doors are preferable, because they may be opened an inch or two only, and yet ventilate the whole of the bin of potatoes. These doors are not needed in the two-story house, because ample ventilation is provided by means of the double and slatted partitions and the slatted floor. To keep out mice, the house should either be raised on posts, or wire-netting should be fastened around the base of it.

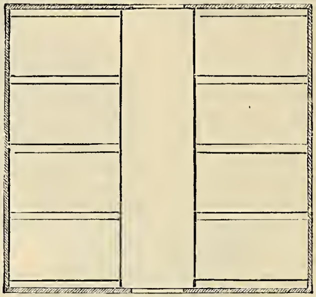


Fig. 1.—PLAN OF SWEET POTATO HOUSE.

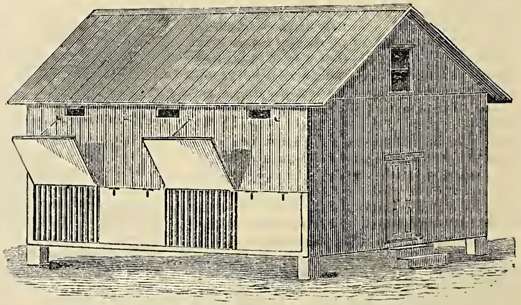


Fig. 2.—VIEW OF HOUSE FOR SWEET POTATOES.

The Trade in Skimmed Milk.

Milk is a thing that, to a great extent, is to be taken on trust. A large proportion of those who consume the milk that is sold in cities, have no knowledge of what pure milk is. There are those who have been brought up in cities, to whom the cow and the milk-pail are only traditions. They procure a white or bluish fluid, as the case may be, and take it for granted that it is *milk*. That skimmed milk is ever sold by farmers, is a fact of which few are aware, and yet, every one in the cities who uses milk is doubtful if what he buys is the pure article. As a rule, we are assured that whatever adulteration there may be in the milk business, is practised in the cities, and after the milk has left the farmer's hands. As a rule, too, we believe that the milk-farmers feed only wholesome and good food. This they cannot help doing, because it is out of their power to obtain anything else. Distillery slop, and garbage, are city products, and are not sufficiently portable to be carried far into the country. Corn-meal, brewers' grains, green fodder, hay, and pasture, furnish the food from which country milk is made. All these are healthful, nutritious, and entirely unobjectionable. The very best milk that is brought into the great cities, is made from these foods, and, as a rule, we are sure that the greatest cleanliness and care are observed by the milk-farmers in the management of their product. The practice of the milk-farmers, who ship pure milk to the cities, is beyond reproach, and the wholesale denunciations heaped upon them, as a class, are undeserved. But there are different classes of consumers to be supplied with milk; the poor, who cannot afford to buy pure milk, and are contented with wholesome skimmed milk; those who are better off, and purchase good milk; and a select class, who will have only milk of extra quality for the use of babes and young children. By dealing with well-known parties in the trade, the last mentioned class get the best milk to be obtained, and in the best possible condition. The greater number of consumers, get what is known as "half skim"; but for this they must blame the retailers, and not the farmers who send the milk. The poorer class of city people, in all cases unfortunately the least able to defend themselves, take the refuse of the market. Much of this is wholesome skimmed milk, of which very large quantities are sent to market since the establishment of creameries, where butter only is made. Some of it is grossly watered stuff, no doubt, but this sort of adulteration has been clearly shown to be the work of dishonest retailers in the cities. The trade in skimmed milk is a perfectly legitimate one, and can not properly be objected to. It is a convenience to the farmer, who finds a market for what would otherwise be a waste product, and also for the poor consumers, who get the worth of their money in such wholesome milk as they can afford to purchase.

A large amount of choice butter comes to the New York market from the Orange Co. (N. Y.) creameries, and, as might be expected, it is from this locality that the city is supplied with a large quantity, in fact, nearly the whole, of its skimmed milk. More than 43.000 gallons, daily, or over 15 million gallons yearly, of skimmed milk is shipped by Orange Co. farmers to New York, by two railroads, the Erie and the N. J. Midland. This large trade has helped to give a bad reputation to the Orange County farmers amongst thoughtless persons, who jump at the conclusion that the traffic is objectionable and immoral, and they consequently deprecate it vigorously. As we have shown, this view of it is unwarranted, and if by any local ordinances of the city, the business should be interfered with, it would be a serious disadvantage to the Orange County farmers, and to the poor citizens of New York as well, who would then be deprived of a cheap but wholesome milk, and be obliged to procure their supply from the suppressed swill dairies, which would soon appear again when the demand for cheap milk should arise. Pure skimmed milk is infinitely better than the diseased and poisonous product of these swill dairies, and the trade in wholesome skim milk, provided the article is sold on its own merits, and for exactly what it is, is one to be encouraged, rather than one to be denounced.

Feeding Large or Small Animals.

Abundant experience, if such proof were necessary, shows that there is more profit in feeding the larger breeds, than there is with the smaller breeds of animals, whether for meat or milk. Of course, there are exceptions in this, as in all general rules; the small Jersey cow, for example, which is expected to produce an exceptional product of highly colored and finely flavored butter; but this does not affect the rule above stated. It is only necessary to consider that, when we feed two animals of 700 lbs. each, we have to supply the demands of two sets of breathing, circulating and muscular apparatus, which are considerably more extensive and expensive than those of one animal of 1,400 lbs. This is true of every animal that we feed, from the fowl and pig, up to the cow and fatted steer. Ten small Merino sheep, weighing 80 pounds each, will cost much more to feed than four Cotswolds of 200 lbs. each, or five of 160 lbs. each. Besides the gain in feed, we have also a large advantage in the less proportionate amount of offal in the fewer large animals than in the larger number of small ones. Where flesh and milk are the objects in view, this consideration ought to have great weight in the selection of stock to be kept. The choice, of course, will be restricted by the opportunities for keeping the stock, for it will not pay to keep Shorthorn cows upon a pasture where only small active cattle can pick up a living; but, where other things are equal, this consideration should be well weighed. Just now, there is opening up a large opportunity for feeding stock for beef, which many farmers will very soon find a desirable one to seize upon. In choosing animals for feeding, then, they will find it to their profit to select such large breeds as the Shorthorn, or Hereford, where their locality admits of it; and where it does not, they will certainly labor under the disadvantage of preparing for market an article which can neither sell for the highest price, nor can be produced at the lowest cost. Further, there is another advantage in marketing the largest amount of product in one package, so to speak, for animals of 1,500 to 1,600 lbs. can be sent to market at less proportional cost than the same weight in the form of animals that are one-half or one-third smaller.

The Bronze Turkey.

All things considered we place the bronze turkey at the head of all the breeds of this domesticated bird. The white, buff, black, slate, and other varieties, all come from the wild turkey of our woods and prairies, which still exists in considerable numbers in the newer States and Territories. Occasional specimens of the wild bird, generally old gobblers, are captured, which equal the heaviest weights of the farm-yard, but the average of the wild birds is much lighter than the average of a well-bred farm flock. The bronze breed is the smallest departure from the wild bird in respect to color, and a decided improvement upon it, both in color and size. Nothing can exceed the brilliant plumage of a bronze cock-turkey, in his second or third year, and the females are hardly less attractive. The dirty snuff-color, which marks the wild birds, is entirely bred out of them. This lustre of the plumage, assimilating to that of burnished gold in the sunlight, has made the bronze variety a great favorite with all admirers of fine poultry. About every thing known to the arts of the breeder has been done for the bronze turkey to bring the stock to its highest perfection. They are the Shorthorns of the poultry yard. They have been bred especially for size for a long time, and when we select stock from a flock of thorough-bred birds, we have certain qualities fixed in them, which are reproduced in their offspring. They are uniformly beautiful in plumage, and heavier than birds raised from the common stock. The increased cost of the breeding stock is paid for in the larger average weight of the turkeys slaughtered for the markets at Thanksgiving and Christmas. The standard weights for adult birds of the bronze variety, fixed by the "American Poultry Association," are, for males, twenty-five pounds; for females sixteen pounds; but these weights, in well-bred flocks, are often reached in the first year, and adult pairs of 45 to 50 lbs. are not uncommon, and 60 to 65 lbs. are sometimes, though rarely, reached. It pays to breed, invariably, from the best stock.

Standing Water.—Water is life-giving so long as it is in motion, its presence is fatal to vegetation when it is stagnant. Provision for the rapid removal of water that may come upon the fields, should not be neglected before the ground freezes, or is covered with snow. This is peremptory for growing crops, and advisable for stubble land, for water left to percolate slowly through the soil, will dissolve out from it, and carry off, much soluble fertilizing matter; all the nitrates, which are so valuable, being the first matter that is thus lost.

Leaks in the Barn.

Here and there may be seen stables and barns with broken windows, loose boards, holes in the roofs, or doors and windows that gape open, and refuse to shut closely. Through these openings the cold air and rain will leak in, and the warm air will leak out. Such leaks as these are disagreeable to see, and are uncomfortable to the occupants of the buildings. But these are by no means the whole of the affair. The worst of it is, that through these leaks the farmer's profits disappear, very silently, it is true, but not the less steadily and constantly. While his cattle stand and shiver in the cool, sharp nights, or steam under the penetrating rain-storms or snow, with every shiver there disappears a quantity of the fodder from the barn, as well as some of the milk from the cows, some fat from the steers and the pigs, some wool from the sheep, and some eggs from the poultry. The farmer looks and wonders. He complains that the cows are rough, that "there is no good in the feed"; that the pigs do not fatten as fast as they should, that there are no eggs, and the hens are eating their heads off. Well, an animal can not use up all its food in keeping warm, and at the same time make milk, fat, wool, or eggs. These are made from food, and from only the *surplus* of the food, after the bodily wants and needs are supplied. In the Polar regions, a man needs six pounds of fat meat, and the same of bread, for his daily meals, while an East Indian needs but a pound of rice for a day's subsistence. When working in the northern woods in the depths of winter, with the thermometer far below zero for weeks at a time, the lumberer eats with relish huge lumps of clear fat pork, with his daily two pounds of bread and liberal messes of bean soup; food of this kind would sicken a man, were he to look at it in the harvest field. All this food goes to make up the waste of heat from the body during the excessive cold. It is precisely so in the barn, or in the pig-pen. If these are kept so warm that water will never freeze in them, much less food is needed by the animals than if the air is far below a freezing temperature; and if the temperature is comfortably warm, less food still will be required. So wherever a stream of cold air, snow, or rain, pours in upon the cattle, or when they are miserable and uncomfortable, a stream of wasted food pours out all the time through the leak. Now is the time to stop these leaks. A board here and there; a good glazed window in place of a broken shutter; warm, dry litter in place of a foul wet bed; a tight roof and a plastered or double-boarded ceiling, all these are actually worth more than an extra portion of food to an animal, because, although when cold and chilled it eats the more, yet it thrives poorly; while if well housed, it will keep sleek and thrifty upon comparatively moderate feeding.

The Langshan Fowl.—Some time ago we introduced to the notice of our readers the Langshan, a variety of fowl that had been recently imported into England from a part of the Chinese Empire. Since then, further experience with these fowls has given them a favorable reputation, and we see it noticed in the English papers that they are proving to be very early layers, and excellent table fowls. A correspondent of the "London Live Stock Journal" reports, that he has had eggs from pullets only 4½ months old, which is remarkable, even with the most precocious specimens of the breeds noted for early laying. An importation of these fowls has been made by Mr. Edward A. Samuels, of Waltham, Mass., and if the reputation they have made in England, is maintained in this country, we expect them to become very popular.

Cross-bred Sheep.—At the New York State Fair there were exhibited some sheep bred from common Merino ewes and a Cotswold ram. The fleeces of the first cross measured five inches in length, and the wool was as fine as the Merino, and as easily combed as that of a Cotswold. The wool of the second cross, as long as that of the pure Cotswold, was still as fine as Merino wool. The carcass of the cross-bred sheep makes excellent mutton, and is nearly as heavy as the pure Cotswold. We have frequently alluded to the advantage of this cross, and the interesting example shown at Rochester, proves how useful and profitable a farmer's sheep it would be. The farmer's sheep is undoubtedly the cross-bred.

The Arrangement of the Stack Yard.

It is unnecessary to provide costly barns for the storage of crops. This is an avoidable expense that is a burden upon many farmers. For the shelter of cattle, light, comparatively low and cheap buildings only, are needed. In reality, the costly, heavy timbered barns may be easily dispensed with, and in many cases the basements beneath them are extremely unhealthful for the animals kept in them. If crops of hay and grain can be stored in stacks in the damp, rainy climates of European countries, they can easily be so kept here. As an instance of how this may be done, we give an illustration of the stack-yard of a well known farm. These stacks are chiefly grain, some being hay, and some thrashed straw. In making stacks it is advisable to adopt the shape of those here shown. What is worth doing, is worth doing well, and the contents of a badly made stack will almost certainly be damaged or spoiled. The cover of the stack may be made weather proof without the troublesome thatching sometimes used; all that is necessary to be done, is to protect the top by straw, or coarse hay, laid on regularly, each layer overlapping the lower one so as to shed rain. The cover should be fastened down with hay bands or straw ropes, or where there is not time to spin these, loose spun, cheap, tarred, hempen rope may be used instead, and will last many years if well cared for. The stack yard should be close to the stables and thrashing barn, and should be well fenced to keep out tresspassers; poultry of various kinds will be found more mischievous in this respect than large animals.

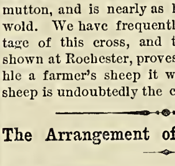


Fig. 2.—Frame for Stack.

To keep out vermin, there should be properly constructed stack-bottoms. These may be made with brick pillars, one being in the center, and others ranged around it either in a circle or square, as may be desired. Floor joists may be laid upon the pillars, as shown at figure 2 (p. 427), and connected near the ends, which project two feet over the pillars, by cross pieces, as there shown. A tight plank floor may be laid upon the joists, and as this projects at least two feet out from the posts, rats or mice can easily be kept out of the stacks; besides, as the floor is raised from the ground at least 18 or 20 inches, these destructive vermin find no hiding places underneath the stack, and soon leave for more comfortable quarters, or are destroyed by cats, dogs, owls, and hawks.

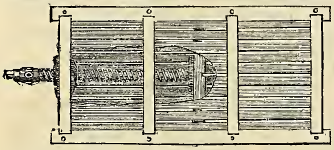


Fig. 3.—FRAME FOR A HAY PRESS.

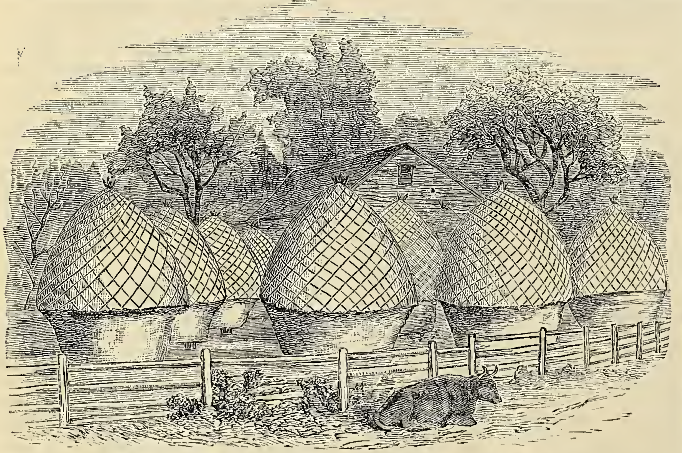


Fig. 1.—VIEW OF A STACK YARD, WITH PROPERLY COVERED STACKS.

* * *

Pressing Hay and Hay Presses.

There is a rapid increase in the demand for hay as an article of merchandise to be shipped to distant places. So bulky a material as this, is not readily portable, unless it is very closely compressed into bales. The more closely the hay may be compressed, the more extensive will be the market for it, and the greater the distance to which it can be profitably carried. If ten tons of hay can be pressed so closely that it can be carried in an ordinary freight-car, it is clear that it can be carried twice as far for the same money, as if only five tons could be put into the car; because light, bulky articles are charged for the room they occupy, and not according to their weight. The more effective the method of compressing hay, the greater its value to the grower of it, and it is to the farmer's interest to procure the best obtainable presses. A large and growing business is now done in packing hay, and the extension of the trade is only limited by the quantity produced, and the cost of packing. It is now no longer held to be an axiom in farming that "all the hay and straw grown upon the farm should be fed upon the farm." When a farmer can purchase for a dollar, in the shape of artificial fertilizers, all the fertilizing elements that a ton of straw contains, and for the value of a ton of hay can procure an equivalent of greatly more valuable food, such as bran, oil-cake meal, or corn meal, it is profitable for him to sell his hay, and use the purchased substitute. Should the plan of wintering stock exclusively on meal become anything like general among farmers, a still larger quantity of hay would be thrown upon the market, and must necessarily be baled for shipment. The use of hay presses, in view of all these circumstances, would seem therefore to be capable of great extension, and it is well that every producer of hay should be informed about these useful machines. We here describe two hay presses, either of which is very convenient and effective in use. The press shown at fig. 1, is "The Perpetual Hay Press," made by P. K. Dederick Company, of Albany, N. Y., and is one of the several kinds manufactured by them. This machine is shown as operated by a common lever horse-power, but any other power, either of horses or steam, can be applied to it. As the name, "perpetual press," indicates, the pressing is continuous, and it need not be stopped to remove the bales, as they are made. The hay is pressed into small bundles of 10 to 25 pounds each, and the bale is made up of several of these. Bales of 100 or more pounds can be made, but the convenience of light bales is such, as to make them most desirable. These presses are made of two sizes, and will so press the hay, as to allow 8 to 10 tons to be packed in a grain car. The "Dodge Excelsior Press," shown at figure 2, is somewhat similar to the preceding, but it makes a round bale, and ten tons of hay can so be packed, as to go into a car. It is very portable, and in this respect seems to have an advantage over some other hay presses. With two horses, six tons of hay are easily pressed in a day, and with four horses ten tons may be packed. This machine received the first premium at the New York State Fair. It can be operated by any sort of power, either by horses or by steam engine, as may be preferred.

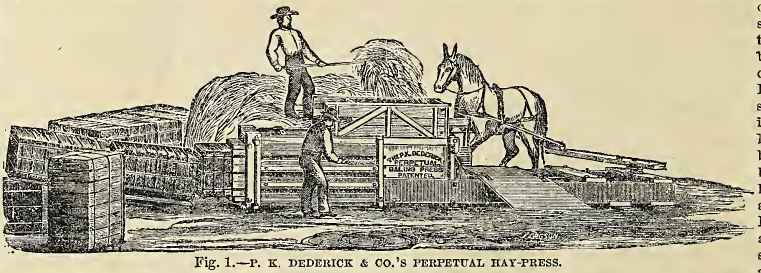


Fig. 1.—P. K. DEDERICK & CO.'S PERPETUAL HAY-PRESS.

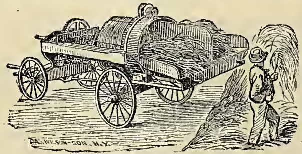


Fig. 2.—DODGE'S EXCELSIOR PRESS.

A machine that can be made by any mechanic from materials that may be at hand, is inquired for by correspondents located in Arizona and Colorado, hundreds of miles from railroads, and where freighting costs several cents per pound. In such places it is probable that the manufacturers of the presses here mentioned, could supply the iron work of the machines, leaving the wood-work, which is the cumbrous portion, to be made where the press is to be used. This would much reduce the cost of freight. Otherwise a frame, such as that shown at figure 3, may be made wholly of wood, and the pressure may be applied by means of an iron screw, (fig. 4,) which would be all that might be needed to be freighted. The frame should be made of stout timber, strongly mortised together, with shoulders to each mortise, to strengthen the joints and enable them to stand the strain, and the pins to fasten the mortise should be strong. The frame is lined within on the bottom and two sides with smooth strips, placed lengthwise; a door being provided on the end, as shown at figure 5, through which the bale is removed. The press is filled at the top, and the hay is trampled down as compactly as possible; loose planks are then placed lengthwise upon the hay, one end of each plank being pushed under a cross-bar of the frame, and the other ends being held down by a loose cross-bar, which fits at each end into slots in the frame timbers. The ties, of strong cord, are passed through the notches seen in the follower, and others in the falling door at the end; when the bale is pressed, the ends of the cords are tied on each side. The screw, fig. 4, is one made by Messrs. E. Whitman & Sons, of Baltimore, who make a specialty of screws of this kind for tobacco and other presses; but any of the ordinary screws, worked either with a bar, or a double-handled winch, will answer the purpose. It is a question, however, if the money can be spared for the purchase, whether it would not be better to procure one of the very useful and effective machines above described, rather than to work more slowly and less economically with any home-made press. This question must, of course, be decided according to the circumstances of each case.

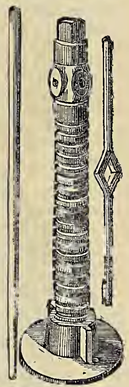


Fig. 4.—SCREW.

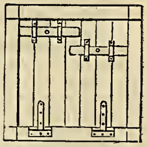
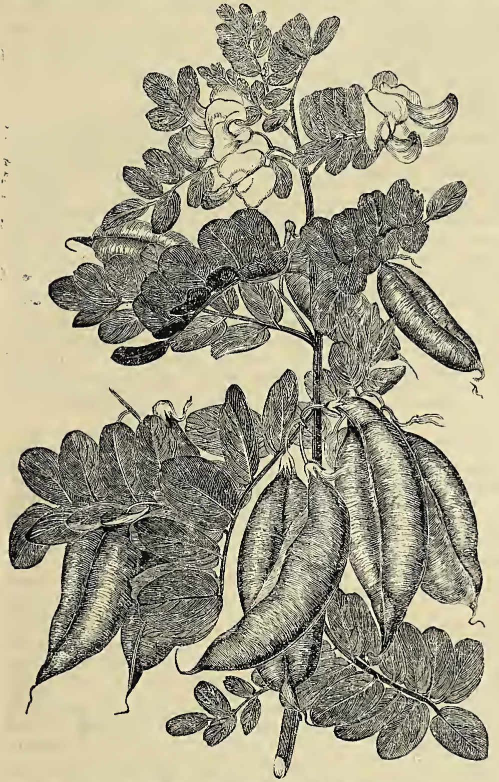


Fig. 5.—END DOOR.

The Bladder Senna.

In speaking of the merits of trees and shrubs, we have frequently noted the autumnal colors of their foliage, and the ornamental character of their fruit, when either were conspicuous. In shrubs, especially, if the fruit is showy, we are provided with a double enjoyment, first in their flowers, and again when the fruit ripens. We are reminded of this especially by the High Bush Cranberry, (*Viburnum Opulus*), always a favorite with us when in flower; this season it set fruit very freely, and the bright red clusters were showy for some time. Another shrub that has been unusually productive this year is the Bladder Senna, (*Colutea arborescens*), a native of Europe, where it rarely grows over 10 feet in hight. Its abundant clusters of yellow pea-shaped flowers are pleasing, though not very showy; these are followed by thin pods, which attain a size out of all proportion to the seeds they contain. The pods grow rapidly, and when of full size are two to almost three inches long; they are very thin and bladdery, and being puffed up by the enclosed air, present the appearance shown in the engraving. They become of a fine crimson, and a bush loaded with them is very showy, especially when seen from a point opposite that from which the sun shines; the light strikes through the thin walls of the pod, and shows off their color to great advantage. When the pods are pressed in the hand, they explode with a crack, loud enough to make the shrub a source of much amusement to young people, who should not, however, be indulged in this harmless style of explosive, if it is desired to gather the seeds. The origin of the botanical name is not well understood, the common name was suggested by the bladdery character of the fruit, and the fact that the leaves have been used as a substitute for the medicinal senna. We very rarely mention a plant of any kind, but a number of persons write to ask where it can be bought; to save our readers this trouble, we will say that this *Colutea* is kept in the principal nurseries, and that our own plants came from the nurseries of Ellwanger & Barry, Rochester, N. Y.


THE BLADDER SENNA IN FRUIT.—(*Colutea arborescens.*)

THE WEEPING HEMLOCK SPRUCE.—(*Abies Canadensis*, var. *pendula.*)

Small Evergreens for Small Places.

Last month we called attention to several choice deciduous trees of low growth, which are much better adapted to the planting of small grounds than those which, in time, become large trees. The same applies to evergreens—and we use the term evergreen in its popular application to coniferous trees. Of course the time for planting all trees has gone by with those in northern localities; but now, as the days get shorter, and the evenings longer, is the proper time to discuss these matters, and to talk over the merits of the various trees, whether deciduous or evergreen. He who would properly lay out his place, be it a park or front yard, should commence the work by making a planting map and fixing upon the place of every tree and shrub, after its merits have been canvassed, he thus has the pleasure of designing, or as we may say, creating his surroundings, and when the proper season comes, he can work out his ideas with the plants themselves. It is well to recollect that mistakes in the first—planting upon paper—are much more readily rectified than in the work itself, and the chance of having to make any changes are greatly diminished by the careful preparation of the planting map. Assuming that a place, however small, will have a share of evergreen trees, we would say that it is just as necessary with these, as with deciduous trees, to select those that are suited to the situation. Evergreens, even those that ultimately reach the hight of first-class trees, look so neat and compact in the nursery, that the inexperienced person is apt to forget that they will not always be small, or even of moderate size, but when well established, instead of remaining garden pets, will grow up and become forest trees. The Norway Spruce, the Austrian Pine, the White Pine, not to mention others, than which nothing can be better in their places, are often planted—a dozen of them—in a space not large enough for one when it reaches full size. There is too much shade, and the view is shut out, and then must follow cutting down—which is not so bad, but more generally a *cutting up*. We can not blame one who planted trees 10 or 20 years ago, and seen them grow up with his children, if he hesitates to fell them—indeed he rarely does it, but adopts a compromise, by cutting away the lower limbs to admit light and air. For this we must blame him, as the prime beauty of the trees is gone. The worst thing possible that can happen to an evergreen, is not to cut it down altogether, but to lop off its lower branches, leaving it with no more beauty of form than that presented by a hay-stack set upon a post. But all these troubles may be avoided by the selection of evergreen trees that do not grow large, as well as those that can, by proper pruning, be kept within the necessary bounds. The pruning of evergreens, which, within the recollection of most of us, was regarded as an impossibility, will be treated of at another time; suffice it to say that many may be as freely cut and shaped as a deciduous tree. In selecting evergreens for planting, one can spend much or little money, there being abundant opportunity to indulge one's tastes in this direction; but our remarks are for those of moderate means, who would accomplish their object without heavy outlay. Our best nurseries contain dwarf forms of many of the evergreens that ordinarily reach a very large size, besides species that are naturally of low growth, and by the study of a catalogue there is no difficulty in selecting trees appropriate to even the smallest places. Take for example that useful and popular tree, the Norway Spruce (*Abies excelsa*), it has been raised so largely from seed that a great number of forms have been produced; some of these can not be called ornamental, but are mere monsters, curious as showing how uncouth a tree can be when it tries hard, while others have a neat and compact habit that commends them for planting in small grounds. The best among these dwarf forms are Clanbrasils' Spruce (*Abies excelsa*, var. *Clanbrasiliana*)*;* the Conical Spruce (var. *conica*)*;* Gregory's Spruce (var. *Gregoriana*,) and the dwarf form known as *diffusa.* None of these are disposed to grow tall, and some will not reach over six feet in a lifetime. Among the pines are several that have a dwarf habit. There is a variety of our common White Pine (*Pinus Strobus*) which is in the catalogues as *pumila* and *nana;* it grows only about 8 feet high, and has shorter foliage than the ordinary form. The Scotch Pine (*Pinus sylvestris*), has produced, among several forms, a dwarf one called *pumila*. The Mugho Pine (*Pinus Mugho*), is a low-growing species, and there is a variety of it (var. *pumila* or *nana*) that is still more dwarf.

There are several dwarf Junipers and Arbor Vitæs, the names of which are given in the catalogues. The most beautiful of our native Evergreens, the Hemlocks, has produced several interesting forms; the Small-leaved Hemlock, (*Abies Canadensis*, var. *microphylla*), has very small foliage, while the Large-leaved (var. *macrophylla*), runs to the opposite extreme; there are one or two very dwarf forms, but the most beautiful of all is the Weeping Hemlock (var. *pendula*), of which an engraving is here given. This variety has its branches positively pendulous, even the leader bending over upon itself. This has been grafted upon tall stocks, but so treated it is not satisfactory, and the trees far inferior in beauty to those in which the branches start from the base. This form was discovered, if we mistake not, near Fishkill-on-the-Hudson, by Henry Winthrop Sargent, Esq., and is now in the hands of Samuel B. Parsons & Sons, at whose nursery, at Flushing, L. I., we saw some fine specimens, including that from which our engraving was taken. It is not yet known what size it will attain, but no tree bears cutting better than the Hemlock, and by judicious pruning, this may be kept at any desired hight; indeed the ordinary forms of Hemlock, Arbor Vitæ, and Norway Spruce, are all tractable in hedges, and may be converted into artificial dwarfs by pruning. In mentioning some of the striking forms of common evergreens seen at the Kissena Nurseries, we do not forget that there are many other and rarer evergreens adapted to small places, but we have referred to those likely to be popular, and within the reach of persons of moderate means.

Blundering from European Practice.

BY PETER HENDERSON.

The *American Agriculturist* possesses one advantage over most of its contemporaries, from the fact that the "man at the helm" has the necessary practical knowledge to prevent its correspondents from leading its readers into error, often times of such a grave character as to be ruinous. The other day, in looking over the columns of a contemporary journal, a correspondent—giving instructions on the cultivation of celery, advises to "sow the seed in a hot-bed about the first of April."—This is the stereotyped English practice, perfectly proper there, where the temperature during the growing season is probably ten degrees lower than with us, but if it is done here, the chances are more than equal that one-half of the crop would run to seed, especially with some varieties. There is no necessity, whatever, to do this here, even in the most Northerly States of the Union, for our temperature is high enough to grow the plants of sufficient size before the planting season in July, if sown in the open ground, any time before the first of May. We prefer to sow celery by the first or the middle of April, if the ground is sufficiently dry, but *in no case,* and under no circumstances, anywhere other than in the open field. One of the greatest hindrances to horticultural progress in the United States, is the fact that, as yet, the great majority of gardeners are from Europe; they come here brimful of importance with the knowledge they think they possess, and it takes years to convince them that the experience acquired there is not only useless, but actually disastrous in its results when applied here. Notwithstanding this, we see, again and again, our magazines quoting, without qualification, from foreign agricultural and horticultural papers, articles describing methods of culture, that must mislead the uninitiated reader. The cultivator is governed in his seed-sowing, transplanting, and other garden operations, by particular dates or seasons; but if his practice has been limited to the climate of England, with its cloudy, moist atmosphere, and low summer temperature, unless he is sensible enough to adapt himself to the changed conditions which he finds here, he will make many miserable failures.

I could name instances by the dozen, where blunders have been made, by slavishly following English rules in our American climate, blunders that have brought scores to failure when they attempted gardening here, with no other knowledge or instruction than derived from their English training. In fact, I never knew an instance where an English, Irish, or Scotchman, who began business either as a nurseryman, market gardener, or florist, immediately on his arrival in this country, that ever made a success in either pursuit. There may be some who have succeeded, but I know of none, while I have known of many who have so begun and failed.

Notes from the Pines.

Last month's "Notes" closed with some mention of the grounds of Prof. Charles S. Sargent, Brookline, Mass. It is not my purpose to give a detailed description of these interesting private grounds, but to point out a few of the striking features, especially such as offer suggestions to others. Of this kind is an example of the

Utilization of Common Things.

In one place where it is desirable to shut out the view, it is done by a plantation of various "sub-tropical" plants, especially the Cannas with dark-colored foliage. A wall of these purple or maroon-colored Cannas would be too sombre, and the effect of these was lightened with—what do you suppose?—common Sunflowers! But few would have the courage to try this experiment, for the Sunflower is everywhere an associate of poverty, and suggests unhung gates, leading to houses, with broken windows mended with the crowns of venerable hats. Yet here the despised Sunflowers lighted up the dark foliage like so many torches, and instead of making the rest look common, they were exalted by being in good company. While this is not regarded as one of the "show places" around Boston, the grounds being characterized by their broad landscape effects, rather than by elaborate ornamentation, it presents one example in the modern style of gardening, far superior to any I have seen elsewhere. It is what may be termed

A Mosaic Bed,

in which such formal plants as the echeverias, or cotyledons, sempervivums, and other succulents, are used for working out a design that is in itself highly pleasing, and which, regarded as a display of vegetation of peculiar forms, is really wonderful. The bed referred to is some 15 feet long, and 5 feet wide, with a gracefully flowing outline; the plants are set at three distinct elevations, and figures are worked in its surface by the use of plants of different shades of color, forms, and habit of growth. The bed in question must contain thousands of plants, which are so closely set that the soil is nowhere visible. The plants most largely used, the echeverias, or cotyledons, while they vary in tint, have yet something of sameness in their color, and this, in the example in question, is judiciously relieved by the use of the variegated *Mesembryanthemum cordifolium*, *alternantheras*, etc., and the effect of the whole in contrast with the surrounding carpet of grass, is very striking. I am not much in sympathy with this style of gardening, but there is nothing so takes the popular eye, and a bed of this kind will excite the admiration of those who will pass by, unnoticed, fine specimen plants that have cost years of careful culture to produce. One bed, noticed here, presents a

Novel Combination.

It is a large circular bed, thickly planted with that most beautiful late-blooming Anemone, known as "Honorine Jobert," and this surrounded by an ample margin of *Sedum spectabile*, a late species, which is known in some gardens by the incorrect name of *Sedum Fabarium.* The abundant flowers of the Anemone form a sheet of the purest white, bordered by the lively rose-color of the Sedums, and the effect is that of spring rather than autumn. This bed pleased me for several reasons: it is composed of plants that are not especially costly to purchase, and which may be propagated with great ease; they are both quite hardy, and if desired, the bed may be kept the same for several years, with but little care, and it provides for a mass of cheerful bloom, at the very end of the season when flowers are not abundant, and the few that we have are autumnal in tints....Mr. Sargent makes use of

Young Coniferous Evergreens

in a most sensible manner. Instead of dotting them here and there about the grounds while small, or consigning them to formal nursery rows, to be unseen until large enough for their final planting, they are made use of in something the manner of bedding plants, large borders being filled with them, not more closely planted than they would be in the nursery, but set in such a manner as to show the young trees most effectively. The charming golden *Retinispora plumosa aurea*, shows finely against the dark foliage of Lawson's Cypress, and the feathery character of both is brought out by contrast with such formal subjects as Podocarpus, Umbrella Pine of Japan, (*Sciadopitys*), and others. By this treatment the trees contribute greatly to the ornamentation of the grounds, and their early phases, often the most interesting, can be observed until, having become too large for the border, they are set out in their final stations.....Not far from Mr. Sargents' is the garden of Francis Parkman, Esq., known to many as the most charming narrator of early American History, and to many others as the author of a standard work on the Rose, and as the

President of the Massachusetts Horticultural Society.

I visit his garden with more pleasure, than I do most others, because it is more like my own; the plants are grown for themselves alone, and without reference to their general effect. One is always sure of seeing here some specialty. This year the Perennial Garden Phloxes are the most prominent plants, and are special favorites of mine. Mr. Parkman has for some time occupied himself with raising seedlings, and his beds, containing hundreds in full bloom, presented a gay appearance. These phloxes have in late years received the attention of several specialists, and few garden plants have shown greater improvement. The colors, selfs and various combinations, present such a variety that it would seem almost impossible to produce a new tint or marking. Indeed, Mr. Parkman is not working so much for new colors, as for a dwarfer and more compact habit, and an improvement in the form of the clusters, and the quality and substance of the individual flowers. Some of his seedlings present curious forms of foliage, and out of the many hundreds that he has raised, we have no doubt that his labor will be rewarded by finding that some of his new seedlings are of sufficient merit to be added to the already long list of choice named sorts. Mr. P. has long and patiently worked at

Hybridizing and Crossing Lilies,

and his results present features of great interest to those fond of this department of horticulture. One of his hybrids, between *Lilium auratum* and *L. spe-*

ciosum (if I mistake not), was so remarkably fine, that an English nurseryman promptly secured the stock, at what would seem to many a large figure. This lily was much and most deservedly praised in the English journals some months ago, but it was figured as *Lilium Packmanii*, instead of under its proper name, *L. Parkmanii*.....Having heard much of the attractions of

The Forest Hill Cemetery,

I gladly accepted an invitation to visit it. While is not so rich in associations as Mount Auburn, it far exceeds it in natural beauties, and it is also much more "gardenesque." In the older portion of the cemetery, the notion of "mine and thine" has disfigured the grounds by railings and copings, but in the newer part, the repulsive boundary marks are done away with. This cemetery has the reputation of presenting the finest examples of ornamental bedding to be seen in the country. There was not so much of this kind of gardening, as I expected to see, though quite enough, nor was it in any respect superior to what may be seen in private places. The most noticable efforts of this kind were a large anchor and a cross near the entrance. They were in Ivy, bordered with some light-colored Echeveria, and the contrast of these with the well kept grass, was very effective. In one part of the grounds is a remarkable rustic structure of rocks, roots, bridges, and stairs, a very labyrinth, and of immense size. This is so recent that it is not fair to judge of it, but when in time it is furnished with suitable plants, it will be a most striking example of this style of gardening. As it is, agaves, begonias, and other exotics occupy the places which it is hoped will ultimately be filled by hardy and not less picturesque subjects. The excellence of the roads and walks, and the air of neatness that prevailed everywhere, indicate that there is some competent person in charge.

Seedling Peaches.

Every year there are brought or sent for examination a number of seedling peaches, and this year has presented no exception, as we have received perhaps a dozen, mainly from residents in the upper part of New York City, Brooklyn, and other neighboring places. These peaches are, almost without exception, borne by trees which came from seed accidently dropped or planted, and are, as a matter of course, highly esteemed by those who possess them, who look upon them with the partiality common to all who raise seedlings. Some who have these trees, ask how they can dispose of them to advantage, and others offer to supply buds to any who would like to propagate them, and it is a disappointment to them to be told that we do not consider the fruit, which they so highly esteem, as worth propagating. Indeed, of all that have been brought us the past autumn, there was but one that had any claims to be perpetuated. These trees are of course useful to those who have them, as they generally bear abundantly, and the fruit, being ripened on the tree, is better than the majority of peaches that are bought in the market. These seedlings have several characters in common; they are usually late, of very large size, coarse in flesh, and, though often quite juicy, they lack in richness and sweetness. The white seedlings sent this year, are evidently from the Old Mixon Free, and the yellow ones probably trace their parentage to Crawford's Late. There are probably in the yards of the City of Brooklyn alone, over a hundred seedling trees bearing very fair peaches, and no doubt the case is similar in other cities. These seedlings are interesting as showing how generally a good peach will produce a seedling which, if it is not quite equal to its parent, often very nearly approaches it in quality. The reason why we do not encourage the owners of these seedlings to turn them to profit by selling the stock to some nurseryman is this: we are decidedly opposed to multiplying varieties, especially in a fruit in which, like the peach, new seedlings are so easily raised, and the varieties already so numerous. Unless a seedling has some good quality not possessed by those of its season already in cultivation, it should not be propagated, and we have not yet seen any that are equal in quality to the standard kinds, though, being grown under exceptionally favorable conditions, they are often of very large size. These seedlings, ripened on the tree, are seen at their best; if, as is the case with all market fruit, they were picked from two to four days before they were ripe, their quality would be much below what it is when they are not gathered until quite ripe. Our advice to those who are fortunate enough to have these seedlings, is to enjoy the fruit, for we can assure them that the chance of introducing them as new varieties and selling the stock to nurserymen is very small indeed.

Manures for Fruit Trees.

In the virgin soils of the new States and Territories, no manure may be necessary. The fairest fruits shown at our exhibitions are from these regions. But in all the older States manure is as essential for the best results in fruit growing as it is for grain and roots. As a rule the orchard is neglected. It is taken for granted that the apple trees, after they are once planted and cultivated for a few years, will henceforth take care of themselves. The land is sowed with grass seed, and is expected to bear a crop of apples and hay annually. Orchards are common that have seen no manure for a dozen years. As the result of many years' experience in growing pears and apples, we think high cultivation is the secret of success. Of course it is possible to apply manure too freely, but the danger does not lie at all in that direction. As a general manure, within reach of all farmers, there is nothing better than stable or yard manure. In a sandy or gravelly loam, we should compost the stable manure with three or four times its bulk of swamp-muck, peat, head-lands, or some other good absorbents. A dressing of 25 cords to the acre every other year, will promote growth of wood, and the formation of fruit buds. If the ground between the trees is cropped with roots or vines, as it may be with profit while the trees are young, the compost may be applied every year, and in larger quantities. Ashes, leached or unleached, are among the best and cheapest manures for the orchard and fruit-yard. A hundred bushels to the acre every fifth year, with or without the compost, will pay abundantly. Situated near the shore, we have used marine manures largely in the cultivation of fruit trees, and have formed a very favorable opinion of their value. Sea-mud, taken from salt-water ditches, is a valuable fertilizer. So is muscle-bed, which contains a good deal of animal matter. The fresh sea-weed thrown up on the beach, eel-grass, sea-lettuce, kelp, rock-weed, and the fine algæ, or mosses, (so-called,) are all excellent, applied to the ground as a top dressing, and plowed in or passed through the barn-yard and compost heap. Salt marsh-turf sods, cut and dried in summer, and used for bedding in stables, makes a good manure for rather heavy soils. The pear and apple rejoice in a soil made rich with these marine manures, and we have never seen a finer growth of wood, or a better show of fruit than in orchards or gardens near the shore. Bone-dust is always good, if we can secure good bone, and this is not difficult now that we have an Experiment Station to detect frauds and constrain manufacturers to sell their fertilizers by analyses. To make sure of a pure article, we have used whole bones, as they are gathered by boys in the village, from the streets and yards, and from the slaughter-houses. These have cost five or six dollars a ton, delivered, and have been used from one to three bushels in ample borders, at the time of planting the trees. These last a long while in the soil, and furnish lime and phosphoric acid as they are wanted. For villagers this is one of the best and cheapest manures for the fruit yard and vineyard. CONNECTICUT.

THE HERBACEOUS PERENNIAL PHLOXES, or, as they are known in some localities, the "French Lilac," are mentioned by our correspondent at "The Pines"; these are plants that can not be too highly commended. It is probable that three, if not four, of our native species, mostly southern and western, are so hybridized, mixed, and crossed, to produce the named varieties, that it is now hardly possible to trace the parentage of any one of them. The dealers make two classes; "Suffruticosa," the plants not over 2 feet high, with glossy and narrow leaves, and "Decussata," the stems of which are often 4 feet high, with broader and dull leaves; the former are usually earlier than the others, but the line is not very distinctly drawn between them. Some commence to flower in June, and others continue the bloom until frost. Then as to colors, we have in the selfs the purest white, through all shades and tints of cream, rose, salmon, etc., to carmine, light scarlet, crimson, and purple; then we have light shades, with a distinct, dark eye, others with the colors beautifully blended, and still another set with the flowers distinctly striped. New varieties are added every year, and it is almost as useless to give the names for these as for varieties of verbenas. The catalogues must be consulted for the names. If one gets an assorted dozen, or less, of the best, he can hardly go amiss, and we are sure he can hardly get so much satisfaction for the same amount of money expended in any other plants—and being hardy, they give pleasure year after year.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

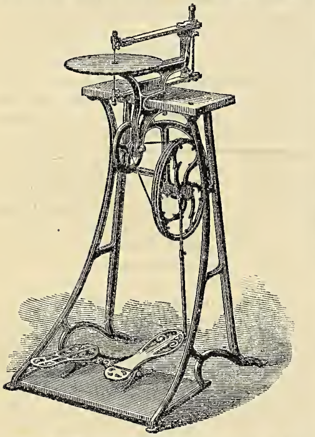
BY FAITH ROCHESTER.

The Preparation of Coffee.

I have just now read the recipes for making coffee, given in "Common Sense in the Household." I have written some good words about this receipt book, but I can not advise young housekeepers to follow Marion Harland's directions for making coffee. I think that any one who cares for the finest flavor of coffee—that "delicious aroma" which escapes so easily—would prefer to see a common tin coffee-pot on the table, containing the infusion just as it had reached the point of perfection over the fire, rather than have the hot coffee poured into another coffee-pot, however rich or handsome, before serving. I do not know how the beverage can be turned into a silver, china, or britannia coffee-pot without considerable waste of aroma. By many coffee drinkers the aroma is valued more than the "body." Such persons do not like to have the coffee boiled at all. Care should be taken to preserve the "aroma" while endeavoring to secure good "body." As the latter is secured by boiling, while the former escapes with the steam during the boiling process, it is a good idea to reserve a portion (say one-third or one-fourth) of the coffee prepared for the pot, (with egg or otherwise), while boiling the rest of it, putting it into the coffee-pot as that is drawn away from the hottest part of the stove or range, to some position where it will keep hot without boiling. There are various patent coffee-pots or coffee-filters, made with a special view to the preparation of clear and excellent coffee, without any especial art on the part of the cook.

How to make the coffee turn off from the grounds *clear*, is a puzzle to some inexperienced or stupid cooks. I suppose that the most common course is to clear the coffee with egg. Some crush the whole egg, and mix the ground coffee with it, shell, yolk, and white together. Others use the white and shell, leaving out the yolk. This is Marion Harland's direction, and she advises us to *beat* the white of egg first. I don't see the need of it, and I never could imagine what good the shell does. Many of the eggs which come from market, and as many which come from our own hen's nests, are decidedly soiled upon the surface, and should be washed before going into any food or drink. That is one reason why I should leave out the shell.

The principle involved seems simple. The more finely the coffee is ground, the more thoroughly can its properties be extracted by a brief boiling. But the finer the ground coffee is, the less does it incline to settle to the bottom of the coffee-pot, and the "muddier" is the beverage, unless some art be used to "settle" the coffee. Break an egg at one end so as to pour out the white, retaining the yolk in the shell. Mix the white well with the ground coffee, and if it is not sufficient to wet it all, add just enough water to dampen the whole, stirring it thoroughly together. Put this into the coffee-pot, and pour boiling water over it, (one pint to each two tablespoonfuls of coffee, Miss Beecher says; Marion Harland says one quart of water to half a pint of ground coffee, afterwards adding a cup of cold water); and the egg is immediately cooked, so as to retain all of the fine coffee grounds in its meshes. If this is properly done, no addition of cold water or anything else after boiling, is necessary to produce clear sparkling coffee. I have often admired the work of the egg in clearing coffee, as I have removed the spongy ball of egg and coffee when cleaning the coffee-pot. It is evident that many housekeepers do not see the philosophy involved in this use of egg, or they would never for a moment suppose that the egg would clear the coffee satisfactorily if put into it at any time after the coffee and boiling water are put together. You want to bind the coffee grounds together with egg, not to add boiled egg to the beverage. Put in the yolk of egg if you like, but it is of no more use than so much water. I prefer to stir it well into the thickening for my cream or milk gravy, where it adds richness and nourishment, and beauty.


"THE DEXTER" SCROLL SAW.—(*See next page.*)

We can not always get an egg to settle coffee with, and few of us possess a French filter, or even an "Old Dominion" coffee-pot. This thing you can do—and I have done it many a time—tie the coffee grounds loosely in a thin bag. If the ground coffee is tied up in a tight bag, the water is slow in penetrating and extracting the properties of the coffee. When I use a thin, loose bag for the coffee, I stop up the nose of the coffee-pot, to retain the aroma as much as possible. If the coffee is ground coarsely it will settle itself, if allowed to stand without boiling a few minutes before serving, and then turned out without shaking. The addition of a half tea-cup of cold water when it is removed from boiling, will settle the grounds, but nothing is quite so good and sure as white of egg, if one can not use a good patent coffee-pot.

Professor Blot, in his cook-book, directed the use of water which had *not been previously boiled*, as soon as it reached the boiling point. For breakfast coffee he advised four tablespoonfuls for a quart of water, for strong coffee eight spoonfuls to a quart, and for "black coffee" one pound to a quart. It is this "black coffee" which is used, I suppose, in making the celebrated

Cafe-au-lait.

This is black coffee added to boiled milk—a tablespoonful to a cup of boiled milk, making a strong cup of unusually delicious coffee, famous all over the world as French coffee. The milk must be new and nice, and slowly simmered to a thick creamy richness. In France it is sweetened with beet sugar. Mrs. Stowe says that this coffee is so black and strong as to be "almost the very essential oil of coffee." There is significance in the name of this drink, suggesting that the coffee should be added to the milk, not the milk poured into the coffee. I wonder if any one ever tried both methods without learning the great superiority of the former.

Browning the Coffee.

To make good coffee, it is essential to have the coffee beans evenly and sufficiently browned or roasted, without burning. They are spoiled if roasted until black, but a yellowish-brown is not right. A rich, dark, chestnut-brown is the right color. There are patent contrivances for roasting coffee, but I have not proved their merits. The beans should first be looked over, then put into a spider or dripping pan, and placed in a moderately hot oven, or upon the top of the stove. They brown evenly with less stirring if placed in the oven, than when over the stove, but this advantage is offset by the danger of forgetting the coffee entirely when out of sight in the oven. It must be stirred often.

Coffee and Health.

I seem to see the Editor shaking his head as he comes to this, but I will give you a few of my own thoughts on this subject, if I may be allowed. He shall have his coffee to the end of his days if he wishes it; and I, when he breakfasts here, will prepare for him most cheerfully, the best cup of coffee I can make from such materials as I can obtain.

But I shall be careful how I aid any young person to acquire the habit of coffee drinking. It certainly is perfectly safe, so far as health is concerned, to live without tea or coffee, either, or both. For many persons it is not safe to use either. Both tea and coffee possess medicinal properties. I see that Dr. Smith, in "Foods," speaks of them as "in some respects *antidotes to each other*," though he does not class either among "poisons." He relates, however, that drinking an infusion made from two ounces of coffee, caused him to fall to the floor and remain unconscious for several minutes. But I did not wish to treat the matter scientifically. I frequently hear persons who have no knowledge of the properties of coffee, assign as a reason for giving up coffee, that they found it injurious to them.

Only the other day a lady was telling me her new way of making coffee, from a mixture of scorched wheat-bran and molasses, and half the usual quantity of coffee. She told me why she made this instead of the strong coffee formerly used. First, the hired man complained of dizziness, and said he must give up coffee. He had learned by previous experience, that the dizziness came from the use of coffee. Soon after, the lady's husband complained of a frequent steady pressure upon the brain, which made it almost impossible for him to read at times. To the suggestion that it might be his coffee, he replied that "it was impossible, as he had always used coffee."—"But you will not get any more," his wife answered, "until I have found out whether coffee causes the trouble."—When the coffee was withdrawn from the daily bill of fare, the trouble in the head ceased. When the needs of a large family seemed to require that coffee be supplied, she found that coffee made of wheat-bran mixed thick in molasses and scorched, with a little real coffee added for flavoring, made a drink quite as acceptable to the family as the old coffee of full strength. But none of her children drink even this, and we were agreed in believing that they will never regret not having accustomed themselves to coffee in their early years. I feel sorry for the children who become attached to tea and coffee before they reach years of discretion. I have known girls and boys in their teens, who could not relish a breakfast, however good, unless they had coffee.

I see how the coffee drinkers (tea drinkers too, but now I happen to be writing about coffee) dote upon their beverage, and sometimes seem to pity me because I eat my food without feeling the need of any fluid to wash it down. But I secretly pity every one of them. I can make a good, satisfactory meal wherever I happen to be, and at any time of day, from bread and milk, or crackers and apples.

[Faith Rochester writes as if she feared that we would not let her speak her mind on the coffee question. However we may disagree with her, we always respect her views, for though a "reformer," she is not revolutionary, and all her crochets, if we may call them so, have for their end and object the welfare and happiness of those for whom she writes. She touches the scientific aspects of the coffee question very gently, and she is prudent. If she wishes, we can show her, upon the very highest authorities, that coffee is of great value; if not exactly as a food, in preventing the bodily waste, and that there are very few nationalities that do not habitually and generally use coffee, tea, or some other plant containing a principle that is very nearly the same, chemically, as the principle of coffee, *Caffein*. The great trouble with all such reformers is, that they look upon people as all alike. We know cases in which coffee is injurious, and our advice is to omit it. So to many persons a meat diet is injurious—then omit that. People must be treated as *individuals*, and the peculiarities of each considered; those to whom cheese, vinegar, honey, and a host of other things, are not only unpleasant, but absolutely poisonous, should have their peculiarities respected. We know that many can not safely take coffee, but that is no reason why the large majority who can take it, not only with safety, but with positive benefit, should be deprived of it. If we have coffee, let it be *coffee*, if coffee is not good for us, let us go without, and not do violence to one of the blessings of a good Providence, by mixing "bran and molasses," or any other substitute whatever, and dignifying the horrid compound by the name of "coffee." ED.]

Kitchen Dresses.

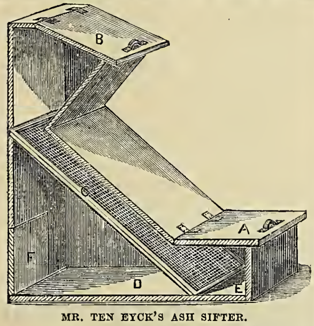
Neat, plain calico wrappers are quite popular for kitchen use. They are easily made with a sewing machine, and can be ironed with less trouble than other dresses. They are becoming to most women, and can be worn as loose and comfortable as you please. But they have disadvantages which make themselves apparent to working women, especially to those who wash and iron their own clothes. They annoy me by bursting off the skirt buttons, or breaking out the button holes, as I take some of the divers shapes required in waiting upon the various needs of children. A large apron saves a good part of the dress from soiling, but the sleeves are soon "mussed" and soiled, and the bottom is "drabbled" with dew and dust, and then the whole expanse of calico must go into the tub and pass under the flat-iron. So on bread days, and cleaning days, and washing days, at least, I like better some kind of a dark worsted skirt, with a big apron and sack of calico. There are many pretty sack patterns, and there are pretty ways of trimming, without much labor or ostentation. Ruffles are always objectionable on goods that must be ironed often,

A WINDOW TRANSPARENCY.—(*See next page.*)

because they add to labor and look "achy." Aprons, cut like apron over-skirts, or meeting behind at the belt, and rounding down toward the front at the bottom, look well with sacks. To hard-working women, who feel the need of saving labor in every reasonable way, the fashionable over-skirt and polonaise are seriously objectionable, because they give a mass of cloth behind, where it is of no use, all of which must be washed, ironed, and draped, whenever the baby's sticky fingers make a muss upon the front breadth. Whatever we may feel it necessary to wear abroad, in order to look "like folks," and avoid dowdyism, we can wear plain and simple clothing at home, and read in the time which we can save by avoiding laborious decoration of our own and children's clothing.

A Simple Ash-Sifter.

In no well managed family is a waste of coal allowed, but the ashes are separated from the cinders, and all of these that can be burned are utilized. Sifting coal ashes is generally a disagreeable job, and it is not to be wondered at that servants shirk it, when allowed to, yet by proper arrangements the labor can be greatly reduced, and the work done rapidly and neatly. We have on former occasions figured various ash-sifters, and we now give one devised by J. H. Ten Eyck, one of the firm of Ten Eyck & Co., of Auburn, N. Y., whose business of reproducing enlarged plain or colored portraits from photographs and daguerreotypes, brings them in relation with people all over the Union. The engraving, reproduced from an exceedingly neat drawing, shows the ash-sifter with one side removed, to expose the interior arrangement. No measurements are given, because as Mr. T. E. suggests, it may be built in a wood-shed or other outbuilding, and will be of a size to suit the place, or the amount of work required of it. The sifter consists of an inclined sieve—the wire-cloth for which may be had of the desired fineness at the hardware stores—placed at such an angle, that the cinders will roll down of their own weight, while the ashes will fall through the meshes of the sieve. This sieve (*C*) is enclosed on all sides, and is provided with a receptacle (*B*) for the ashes, as they come from the grate, one (*D*) for the sifted ashes, and another (*E*) for the cinders freed from the ashes. Its working is automatic; the material to be sifted being put in at *B*, will slide down the sieve, until stopped by an accumulation of cinders at *E*, but on removing these, the sifting will go on again. The ashes must be removed, as they accumulate at *D*, or the sifter may be placed where the ashes will pass down through the floor, or out at one side of their own weight. Those who, like the writer, use the ashes in earth-closets, will prefer the construction shown in the engraving, in which they are kept dry and ready for use, when needed.



MR. TEN EYCK'S ASH SIFTER.

A Window Transparency.

Mrs. M. E. B. The window transparency referred to is made up of ferns, and other plants of pleasing foliage, and grasses. Autumn leaves are also introduced with good effect. All should be thoroughly pressed and dried beforehand, and in selecting the materials, choose those of light and graceful outline. If autumn leaves are used, they should not be varnished, but may be oiled, with linseed oil, or treated with paraffine or spermaceti; either of these may be rubbed on a flat-iron—not too hot, and the leaves ironed until they have taken up what they will of the material. This will strengthen the colors without giving an unnatural gloss. Two pieces of thin clear glass, of equal size, are made perfectly clean, and the ferns, leaves, etc., laid upon one of them according to fancy. If none of the stems cross, there is no need of fastening them, as they may be held in place by pressure; but if an uneven surface is presented, some will need a touch of gum to hold them in place. Having arranged them properly, put on the other glass, and fasten them by narrow strips of paper put upon the edges, using gum, tragacanth, or flour paste. Gum Arabic will not hold well to glass. Colored paper may be put on over the strips, or if strong enough, may be used at first. The engraving will show how the affair appears when finished. We have seen the side lights to a front door thus decorated with very pleasing effect. Care should be taken to have the materials perfectly dry when made up, and the paper around the edges carefully put on. If any moisture is present, or should enter afterwards, mould will be apt to spoil the whole.

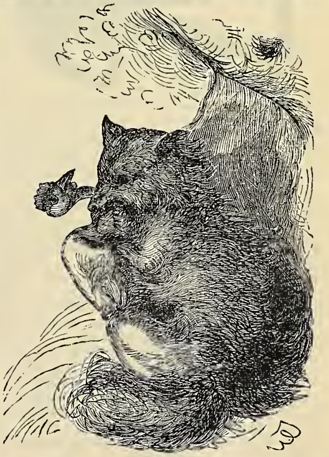
Scroll or Bracket Saws and their Work.

Probably no kind of fancy work has so rapidly increased in popularity, as that made from thin wood sawed in various pleasing forms. Indeed, it seems hardly proper to call it "fancy" work, as many of the articles thus made are really useful. We will not undertake to enumerate the many articles of use and ornament that may be made by one having a moderate share of ingenuity, for the designs are so numerous, that those already published form a class of literature—if it can be so called—by themselves. . Sawing is a pleasing occupation for young or old of both sexes, and the articles may be used for home decoration or use, or may be disposed of as presents to friends. Every sensible person puts a higher value upon a present which represents the painstaking work of the giver, than upon one that is purchased, even if that be many times more costly. Now that Christmas is approaching, and the annual problem, "what shall I give," presents itself, it is well to think of the many pleasing things that may be made with little saws. Some persons have found it profitable to make sawed articles for sale, but they have now become regular articles of trade, and are sold so cheaply that, in large towns at least, mere hand work can not compete with that produced at the factories. Still there is one way in which such articles may be turned to account. Almost every one is now and then called upon to contribute articles to a fair in aid of some church or charity, and being tired of the usual articles of needle-work, crocheting, etc., will find a welcome variety in the products of the saw. As to the materials and tools, there is a variety of both to choose from. In cities there are dealers in fancy lumber, where black-walnut, rosewood, holly, satin-wood, and various other kinds may be purchased in desired quantities. In small places the cabinet maker must be consulted as to available material. There is one resource everywhere in cigar boxes; there is much difference in the quality of the wood of which these are made, but by a little care that may be selected which may be worked to a very fine surface with sand-paper, and when the work is finished and varnished, no one would guess its former use. As to saws, the simplest is merely a saw in a suitable frame, which may be worked by hand. Some of the finest work we have seen was done by a lady of great skill, who preferred the hand-saw to any other. The best tool of this kind is figured on page 406, last month, where will be found information as to how it can be obtained. Then there are saws to which the motion is imparted by a treadle, the power being given by the foot, both hands are free to guide the work. Of these there are styles which may be fastened to a table or bench, and others have their own table or stand, and are complete in themselves. For a long time the Messrs. Trump Bros., of Wilmington, Del., have been engaged in manufacturing scroll saws, and they make a large number of different patterns. Their latest style is called "The Dexter," a very serviceable and workmanlike machine, in which the vibrating parts are of ash, and the clamps which hold the ends of the saw can be easily and quickly adjusted. This is made of a form to be attached to a table, and be worked by an ingenious detached treadle, or it is mounted on a stand, where it is always ready for use. This form mounted of "The Dexter" is shown in the engraving; it takes up but little room, is sufficiently light to be readily moved, and has sufficient power to do any work that may be required of it in fancy sawing.

Green Corn and Pickles.—This season has been no exception to former ones in the number of questions concerning canning green corn and making pickles that will look like those sold in bottles. Though we have replied to these many times, we do so again for the benefit of those who have not back volumes. Green corn can not be preserved in fruit jars, but will keep only when put up in tin cans. The necessity for soldering, and for many hours boiling at a temperature higher than that of boiling water, makes the process too difficult and troublesome to be undertaken in the family. It is not always successful with the regular packers.... The store pickles are greened by soaking the salt from them in copper kettles or vats; they are put up in colorless vinegar, made from whiskey or other form of alcohol, which is sold as "white-wine vinegar." While these pickles look very handsome, they have not so pleasant a flavor as those made from cider vinegar. The whiskey vinegar is just as wholesome as the other, but it has merely a pure acid taste, without the aromatic quality which makes real cider vinegar superior to all other kinds, not excepting that from wine.

BOYS & GIRLS' COLUMNS.

No. 462. Puzzle Picture.—There was trouble in the neighborhood. First farmer Jones missed his best Brahma cock—then his best hen. Then farmer Nelson found that his trio of Plymouth Rocks—prize birds at that—had only one. Complaints came from farmer Green, and the neighborhood was much excited over the matter. At first it was laid to "tramps," but no tramps had been seen for a week, and still fowls were taken. After a rain, the tracks showed plainly that the thief was a fox. That fox was a very mischievous one, as you can see by his portrait—which is *not* from a photograph. It was of no use to try to keep poultry, unless that fox could be got rid of. The neighborhood said he must be shot. It was agreed that the man who shot the



fox should be paid $5, and have the thanks of the neighbors. The fox was shot, and if you wish to know the person who shot him—why use your eyes and find him.

The Doctor's Correspondence.

I had supposed that my young friends' questions about insects would stop as soon as cooler weather came. We have had a good deal of insect talk the past season, but it is because my young friends send me specimens, and ask about them. After all, there is nothing about which there is so little known, even among older persons, as the changes of insects, and perhaps the space could not have been better used. Here at the end of the season are several who wish to know

ABOUT THE DRAGON FLIES,

and as the correspondence is already long, I will make a talk about them in a separate article, on another page. ....Generally I expect that my young friends will look to Aunt Sue for their instructions about fancy-work, but as Sarah E. W. asks about a kind, of which I have seen considerable, I will answer her. Her inquiry is about

ORNAMENTAL SPRUCE WORK,

or fancy articles made from spruce twigs, from which the leaves have fallen. The material generally used is the small shoots of the Norway Spruce, as that is very common in cultivation, though I do not see why those from our native White or Black Spruce would not answer as well. The twigs are cut, and laid away to dry; when quite dry, the leaves will fall off themselves, or by a little shaking. To make them up, soak the twigs in warm water, until so softened that a pin will pass through them easily. Common pins of different sizes are used for putting the pieces together, and if one has a pair of pliers or small pincers, and cutting nippers, such as are used for cutting wire, the work may be done all the easier. The work being put together while the twigs are soft, will need careful handling at first, but when they dry, the pins will be held firmly. The articles that may be made, will depend upon one's fancy or ingenuity; very pretty frames may be made, for small photographs, either to be hung up, or in form of an easel, with a support at the back, so that the frame will stand on a shelf or table. Very pretty miniature furniture may be made in this way, of which the chair (fig. 1) is an example; by selecting the twigs with buds upon them, the beauty of the work will be increased. An ingenious person can work up the material into a great variety of pretty forms.

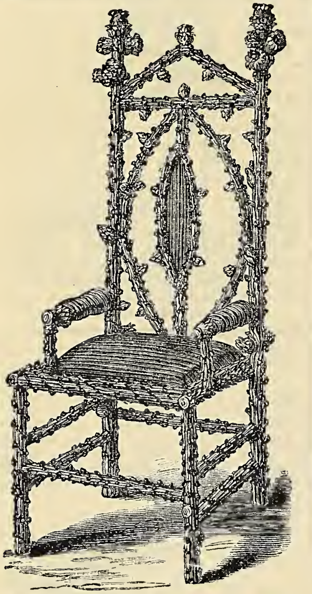


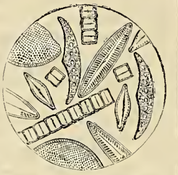
Fig. 1.—CHAIR MADE OF SPRUCE TWIGS.

WRONG IN MY JAPANESE.

In some talk in August last about the markets in Japan, I mentioned a large radish in common use as "diakon." A young Japanese, through "F. M. G.," informs me that the name should be *daikon*, from *dai*, large, and *kon*, root. I thank the young Jap., and though the mistake occurred so long ago, make the correction.....EMMA C. W.—Of course, the Phiz-Phiz Falls exist only in the imagination of the artist.....Here is something that did not turn up in any of the youngsters letters, but I think it may interest you. Some time ago a box of powder for

POLISHING SILVER AND OTHER METALS,

was sent me, with the request that I would try it. I opened the box and found an almost pure-white powder; I felt it between my fingers and found it very fine—almost *impalpable*, as those powders are called, the particles of which are so fine that they can not be felt. Somehow the powder seemed like an old acquaintance. I smelled of it—no odor—I put some upon my tongue—no taste. I then looked at it, taking, to help my old eyes, a microscope that would magnify several hundred times, and then I knew all about the powder. Figure 2 shows what I saw in the least bit—less than you could put into a mosquito's eye—provided you should try. These were some of the most common forms, but there were others, all beautifully carved and marked, and as transparent as glass. If you were to guess what these forms are, you would probably say that they were the shells of some minute animals—and that is what they were at one time supposed to be. It is now known that they are not from animals at all, but from plants. It would be very difficult to describe these little plants so that you could understand much about them.



2.—DIATOMS, MAGNIFIED.

THEY ARE CALLED DIATOMS

by naturalists, the name being from a Greek work meaning "a separation," as some of them break up in a curious manner. They live in both salt and fresh water, and the study of them requires the most powerful magnifying glasses. The living part of the tiny plant is a brownish jelly, and this has the power of forming for itself a sort of frame-work to strengthen and protect it; this is not of lime, as with some minute animals, but a shell, as it may be called, of pure silex, or flint. Many large plants have their stems strengthened by this mineral substance; the straw of our wheat, and other grains, contain a great deal of it, but the diatoms contain so much that when it dies, it leaves a cast or frame-work of silex—which is the same as quartz, crystal, and flint—showing its shape, and this cast is often marked in such a delicate manner that they are among the most beautiful of objects for the microscope. You will perhaps think then, that to make a polishing powder like that sent to me, they have only to catch a great quantity of these little *diatoms*, let them die, and use their flinty shells. Not so—and here comes the most curious part of all.

THE POWDER IS FOUND ALREADY PREPARED!

In immense quantities too, for sometimes the layer is several feet thick and extends for a great distance. One of the wonderful beds of this substance is in Virginia, the city of Richmond is underlaid with it, several feet below the surface, the bed is in some places 30 ft. thick, and is known to be some 50 miles in extent. "How did they come there?"—You may well ask that question. As deposits of a similar kind are forming now at the bottom of the sea and of fresh waters, there can be little doubt that the places where Richmond and Petersburgh now are, were once under water, and that these little diatoms lived in this water, died there, and their coats gradually gathered to form this great mass. The largest of these objects is not more than the one-hundredth of an inch across, while most of them are much smaller—so small that they can only be seen by powerful glasses. What length of time it must have taken this deposit to form land; the numbers of diatoms that must have lived and died to make it, are beyond computation.

Aunt Sue's Puzzle-Box.

METAGRAM.

From a word of six letters find suitable words to fill the following blanks:

——— Smith was going ——— (by ———), with his family: he had no ———, but he took with him, three animals, a ———, a ———, and a ——— ———. One day, after ———, he took his brother by the ———, and together they strolled by the ———. His brother, who was a ———, pointed out to him the ——— of his vessel, and said he could climb it with ———. He liked the Captain very much, but disliked the ——— exceedingly, and pointing to a ——— (———), said, "I wish he were there, I might then have some ———," which made his brother ———. C. M. G.

TRANSPOSED AVIARY.

(Example.—*I peg on*,—pigeon.)—1. Chod fling. 2. Drug hin himm. 3. Finger shik. 4. Hinge lating. 5. Girl tans. 6. One pig. 7. No calf. 8. Slow law. 9. Ant's heap. 10. Drag tripe. ISOLA.

NUMERICAL ENIGMA.

I am composed of 34 letters:
My 25, 12, 5, 3, 19, is a flower,—a pet name.
My 22, 15, 27, 11, 24, is a garden plant.
My 6, 16, 13, 10, is a sound.
My 1, 20, 4, 21, 18, 34, is a superior.
My 9, 33, 28, 31, is a measure of length.
My 14, 8, 13, is to obtain.
My 29, 23, 16, 32, 17, 25, is a defense.
My 7, 26, 30, 2, is a particular taste, a kind of tartness.
My whole is a stirring motto. WILLIE.

NINE CONCEALED FRUITS.

We began our search for Tim Horan, getting Ed to assist us by asking Fred to see Mr. Cole, Monday or Tuesday, and by giving the *News* a description of the way Mr. Spears said the cur ran through the street on a double-quick step, each moment crying "catch me if you can," when plump came Dan against him and cried "Stop! run either way and you are caught and good for the jug; rap Ed if you dare, but before you rap, please remember each strike will add to your penalty." But Tim got away and is still at large. HOPE.

ANSWERS TO PUZZLES IN THE SEPTEMBER NUMBER.

COMPOUND CROSS WORD.—Frederick—Georgiana.

DIAMOND PUZZLE.	DECAPITATIONS.
P	1. Chide, hide.
E R A	2. Drail, rail.
T O U G H	3. Sally, Ally.
P R U S S I A	4. Dream, ream.
O U S E L	5. Wharp, harp.
L I D	6. Yearn, earn.
A	7. Enorm, norm.

BIBLICAL ENIGMA.—Wisdom is better than rubies.

PUZZLE.—Dictionary (di-et-ion-ar-y).

ALPHABETICAL ARITHMETIC.—123)68455(556
Key.—"Gay flowers."

CONCEALED SQUARE WORD.
S A L E M
A B I D E
L I M I T
E D I L E
M E T E R

PI.—A piano-forte maker says that, of all manufactured things, pianos bear the noblest character, since they are classified as being grand, upright, and square.

CONCEALED PROVERB.—A good anvil does not fear the hammer.

METAGRAM.—"TOWN," in which may be found—wot, tow, own, won; town, wont, tow. ton; now, not, no; on; and O!

DOUBLE ACROSTIC.	SYNCOPATIONS.
L— ouis —A	1. Rapid, raid.
O— thie —L	2. Resin, rein.
U— bri —C	3. Negro, Nero.
I— mili —O	4. Beset, beet.
S— eot —T	5. Range, rage.
A—methys—T	6. Faree, face.

ANAGRAMS.—1. Paranthesis. 2. Governess. 3. Outrageous. 4. Brunettes. 5. Embroidered. 6. Complaints. 7. Charitable. 8. Barbecue. 9. Balustrade. 10. Dislocated.

ENIGMATICAL BOUQUET.—1. Bachelor's Buttons. 2. Hollyhock. 3. Golden Rod. 4. Jonquil. 5. Sweet Pea. 6. China Aster. 7. Heart's Ease. 8. Monk's Hood. 9. Buttercup.

BLANK REVERSALS.—1. Go, og. 2. War, raw. 3. Room, moor. 4. Was, saw. 5. Rat, tar.

Send communications intended for Aunt Sue, to Box 111. *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Metric System of Measures and Weights.

When I had finished the talks with my "Correspondents," I thought it seemed rather long, but when I remembered that I had promised to say something about the Metric System, I found it would have to be still longer, so I thought that on the whole, it would be better to put this metric matter in a separate article. I told you something, last month, of the beginning of the measures and weights we now use, and how they started with the rude and uncertain standards of grains of barley (barley corns) and of wheat. We have three different kinds of weights, three sorts of liquid measures, and so on. The awkwardness of this is seen when we have to convert one of these into another, such as cube measure into liquid measure, or Troy into Avoirdupois weight. In view of this, and the difficulty of fixing a standard, by which we may be sure that a measure or weight is *right*, our scientific men have long been trying to make a change for the better. Several plans have been talked of, but the majority of those who have studied the matter are in favor of that established by the French, which is called

THE METRIC SYSTEM,

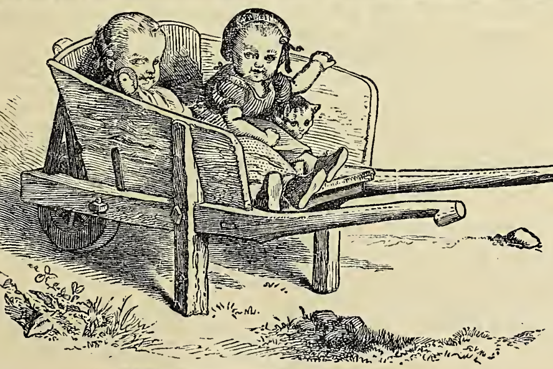
because the *metre* is unit or starting point. The name *metre* is from the Greek and means "measure." It is a measure of length, and one great beauty of the metric system is, that from the metre, all other measures, solid or liquid, and weights also, are derived. The system is sometimes called the "Decimal System," and it is *a* decimal system as all its divisions are in tens, but decimal system does not mean the same thing as "metric system." Our coins are upon the decimal system, and we might take our pound and divide or multiply it by ten, and thus make decimal weights, but it would not be a metric system. So it is best to start right, and call it the *metric* system, as its starting point is the metre. Now as not only the measures of length, but of square, of solid, and liquid measures, all depend upon the metre, you will want to know first about that. It was near the close of the last century, that the French Government determined to establish a new system of measuring and weighing, and commissioners were appointed to consider the matter. For the unit or starting point they wished something that would not (like the barley corns) be uncertain and vary, but something which would be permanent, so that if all the measures in use should be broken or destroyed, they could start anew. Several plans were proposed, but they concluded to take

THE EARTH ITSELF

for a starting point—as that would probably last without much change as long as measures would be wanted. The distance from the equator to the pole (a quadrant of the meridian) was the beginning, and one-ten-millionth of this, taken as the standard of measure, or the *metre*. Of course this whole distance was not measured, but a sufficient portion of it was, by means which astronomers and surveyors understand, but would be difficult to explain. At all events, the metre thus fixed upon was adopted by the French Government in 1801 as the legal standard of measure. You will wish to know what the metre is like, and how it compares with the measures we use. In a rough way we may say that it is three and a third inches longer than our yard of 36 inches. To be exact, it is, according to the latest comparisons, equal to 39.37043 inches. In dividing the metre the decimal system is used; one-tenth of a metre is a decimeter, one-hundreth a centimetre, and one-thousandth, a millimetre. An inch is a trifle over two and a half centimetres. In these divisions of the metre, the Latin terms are used for tenth, hundredth, etc., but in longer measures, in which the metre is multiplied, the Greek numerals are used. Thus ten metres are a Decameter, one hundred metres, a Hectometre, one thousand metres a Kilometre, and ten thousand a Myriametre. A mile is a little over a Kilometre and a half or 1.6093. These names look and sound strange at first, but they are easily learned, and then when a length or a distance is mentioned you know at once what relation it has to a metre. This is very different from, and greatly easier than, line, inch, foot, yard, fathom, rod, furlong and mile, which bear no uniform relation to each other, but in some cases we multiply by three (3 feet make one yard), and then again by forty (40 rods 1 furlong). To get square and solid measure from the metre is very simple, but for fear that some of you may think this is rather dry for boys and girls, we will let that go until another time. Measures of a metre are now to be had at the stores, as they are made by those who make rules and other measuring instruments, I hope that many of you will wish to remember this method of measurement, so I will put it as a table.

Millimetre	1/1000	of a Metre.
Centimetre	1/100	“ “
Decimetre	1/10	“ “
Metre	1—	
Decametre	10	Metres.
Hectometre	100	“
Kilometre	1,000	“
Myriametre	10,000	“

I have no doubt that some of you will live long enough to see these measures in common use. THE DOCTOR.


WHERE THE LITTLE RUNAWAYS WERE FOUND.

The Little Runaways.

"Where can those children be?" asked Mrs. Warner, for she had missed her own little Alice, and her niece, Alice's cousin Kate, who was from the city, making a visit upon the farm. Not in the parlor, not on the porch, not in the front yard, or anywhere in sight, could the children be found. There were the nice new swing, the child's wagon, the building blocks, and all the playthings, but no children. Mrs. Warner began to be anxious, and started to find the little ones. The garden, the carriage-house, the orchard, and the barn, were all hurriedly visited, but no Alice and Kate were to be seen. Now, thoroughly frightened, the mother was about to go to the house to ring the bell, to call the men in from the field to search for the lost children, when she heard a little laugh—followed by "Oh, isn't it nice!"—"Yes, hesser dan the big carriage"—"Yes, so much room, for us and dolly and kitty, and no high seat to slip off of."—"Let's stay all day here, it's real dood"—said Kate. Mrs. W. looked over the fence, and there, in a wheelbarrow, in which the gardener had been wheeling earth, were the two children, the doll and the kitten. The children's faces showed perfect happiness; they were enjoying the rude barrow, more than if it were the most costly child's carriage. She thought for a moment of soiled dresses, and the washing, but the faces of the children quite made her forget these. The little ones were safe, happy, and contented—what more could a loving mother wish.

Aunt Sue's Chats.

SUE L. GOSSER has had a present of an organ, and wants to know how to whiten the keys which are growing yellow. I dare say—Susie—that you have been so careful with that new organ, that you have always shut the lid carefully to keep out the dust. In so doing, you have shut out *the light*, and that is why the keys are turning yellow. There are plenty of recipes for whitening ivory, one of which is, to wash it with alum-water that has been boiled and allowed to cool. But when I have wanted to bleach any small ivory articles, I have put them into a glass jar and placed the jar in some sunny window, or out on a shed, indefinitely, until the ivory had become white; and I should think if you let the sun shine on your keys occasionally, that it would bleach them.

TONY.—Why should I "excuse bad spelling?" Haven't you a dictionary in the house to which you could refer if not quite sure about the spelling of a word?—Suppose you go to it now and see if you can find any such words in it as "*collum*," "*neice*," "*pleas*," and "*boght*." Some of my nieces and nephews write to me—"Pleas *except* these puzzles," and I usually do.

LIZZIE D. W. wishes to know how to "make pop-corn balls." Of prime importance is the "popping" of the corn. This should be conducted so as to produce a complete "turning inside out" of the grain, and is best done by taking a small quantity at a time, just sufficient to cover the bottom of the "popper." Then let the corn, which, by the way, should be old and thoroughly "dry," get well warmed through, by holding the popper and contents far enough from the fire; when well heated, approach the thing nearer the fire, until the first kernel begins to "pop," then approach the fire as closely as you may, so that the remainder shall pop as rapidly as may be. During the entire proceedings the corn must be kept "moving" by shaking constantly. Having the corn popped, be prepared with a thin syrup, almost at the sugaring point. This syrup may be either of molasses or sugar and water, as may be preferred. Fill a cup of any desired size with the popped corn, pour over the corn a sufficiency of the syrup to wet every grain; then, with a spoon, press the kernels sufficiently to make them stick together, and with a spoon carefully work the contents of the cup into a rounded shape, and so out upon a plate, sheet of paper, or tin, or what ever is to hold the balls.

T. M. HENRY wishes me to "give the date and place of each world's fair that has thus far occurred." "International" fairs were held in Paris (France) in 1802, and in Birmingham (England) in 1849. World's Fair in London, 1851; New York, 1853; Paris, 1855; London, 1862; Dublin, 1865; Paris, 1867; Sweden, 1868; Moscow and Copenhagen, 1872; Vienna, 1873; Santiago (Chili), 1875; Philadelphia, 1876; Sidney (Australia), 1877. Three Annual International Exhibitions were held in London in 1871, 1872, and 1873.

PEPITA.—The best raisins, and the most of them, come from Spain, Malaga and Valencia being the principal places of export. You know, no doubt, that raisins are dried grapes, and of the finest, largest, and sweetest kinds. Our common grapes will not make good raisins, as they dry up all to seeds and skins. The grapes sometimes dry into raisins on the vines, but usually they are picked and dried in part in the sun, and in part by fire heat. Sultana raisins come from Turkey; they are made from a small grape that has no seeds. The same kinds of grapes that grow in Spain grow in the wonderful climate of California, and already large quantities of raisins are made in that State.

LIZZIE D. W.—To make icing for cake, beat up the white of one egg until the froth will bear up the blade of a case-knife; then sprinkle into it (by degrees, and stir thoroughly) a little more than a quarter of a pound of finely pulverized sugar. When you have done that, sprinkle over it a scant half teaspoonful of corn-starch, and stir it up; then add one teaspoonful (a little at a time) of water. Some people use, instead of egg, a little gelatine dissolved, but I think you will prefer the egg.

F. CLARK.—Thanks for puzzle. I have sent your botanical specimen to "The Doctor"; he is authority in such matters.

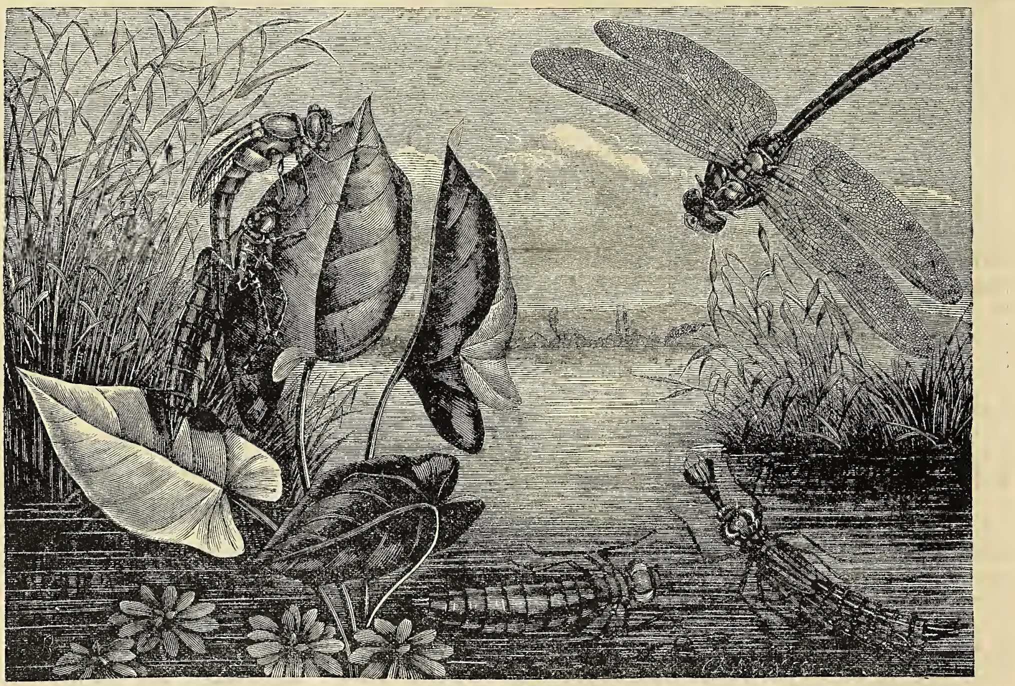
CLUMSY.—You can get the oil out of your carpet by spreading dry buckwheat flour thickly over the spot; it will absorb the grease. Brush off the greasy flour and renew afresh, until all the oil is removed.

ADDIE.—Raw potato cut up into small squares and shaken up in a bottle, will often remove stains; or try a little washing soda and water, with some small gravel-stones, or better yet—shot, and shake until the friction of these against the glass removes whatever may adhere.

Thanks for letters, puzzles, etc., to H. W. S., Esther, J. H. L., Hope, J. W. W., Florence M., T. F. D., H. S., L. C. W., A. F. T., Estelle S., B. S. B., Anna L. S., Peter, Oriole, Eddie, and others, whose favors I hope to answer at some future time.

Something about Dragon Flies.

It is not to be wondered at that several young people should wish to know something about Dragon-flies, for they are among the most noticeable of insects. Their long slender bodies, their large heads, with prominent eyes, and their wide spread, gauzy wings, which reflect beautiful colors in the sunlight, are sure to attract attention. More than all, their rapid flight, now darting with the greatest swiftness, then remaining stationary over a spot, and then as suddenly moving backwards, gives them a mysterious air that no other insects have. It is no wonder that they have been looked upon as harmful insects, for they go about in a silent, strange way, as if there was some mischief to be done. There are over 400 kinds of Dragon-flies, found in various parts of the world, of which we have our share in this country; about 30 are known to live in the Northern States, and there are others in the South, but while they differ in size, color, etc., all have similar ways of living, and a description of the habits of one, answers for all. While their long, snaky bodies, their savage look and their darting flight, make them suspected, and they are generally looked upon as dangerous, I may as well say here, and answer several questions at once, that they are perfectly harmless, so far as man is concerned. They have no piercer or sting, and though the larger ones may be able to pinch with their jaws, if you put your finger there and try to make them do it, they do not bite, sting, or otherwise harm people in any manner. I know that they have a bad reputation. When I was a youngster, they were called "Devil's Darning Needles," and I was told by the older boys that if a boy should tell a fib, one of these "Darning Needles" would come and sew up his mouth. All my playmates must have been very truthful, as I never saw one with his mouth darned by one of these "Needles." But such notions are not found among boys alone; in various places these insects are called by names which show that they are thought to be dangerous. In England they are called "Horse-stingers," and in Scotland "Flying Adders." In some parts of this country they are known among the boys as "Snake Doctors," it being thought that they attend upon snakes, probably because they are



THE LIFE HISTORY OF THE DRAGON-FLIES ILLUSTRATED.

seen hovering over the ponds where there are water-snakes. On the continent of Europe they have more pleasing names. In France, they are *Demoiselles*, or "ladies," and in Germany *Wasserjungfern*, or "Virgins of the Water." In traveling in the Southern States, I had heard them often called "Mosquito Hawks," and was told that they devoured so many mosquitoes that it was considered wrong to kill one of them. At last I had an opportunity to learn that, for once, a popular notion was correct. One excessively hot day in June, I happened to be on Lake Ponchartrain, not far from New Orleans; there were several pleasure houses, to which the people came from the city in the cool of the evening for a drive, and for ice-cream and other refreshments. These places were mere sheds, or shelters, and on the inside of them were mosquitoes by the million, resting in the heat of the day, to be all fresh to receive the evening visitors. I never before, or since, saw so many mosquitoes, for they were so thick as to make the sides of the building look gray. There were also hundreds of Dragon-flies—good, big fellows—which flitted about and fed upon the mosquitoes at such a rate, that I saw at once that they were well named "Mosquito Hawks." When we see these insects so busy darting here and there, they are no doubt hunting for mosquitoes and other insects upon which they feed. The engraving shows one of the Dragon-flies on the wing, and gives an idea of the general appearance of all, though many are much smaller in the body, and in spread of their wings. But the early life of the insect is quite as interesting as that of its perfect or winged state. The female insect places her eggs upon the stems of water plants, just at, or below the surface, and from these hatch out the *larvæ*; or the first form of the insect. The larvæ of the butterflies and moths we know as caterpillars, and that they live on plants on the land, but the larvæ of some insects, including the mosquitoes and Dragon-flies, live entirely in the water until they are ready to change into perfect insects. The larva of the Dragon-flies is sometimes called the "Water Tiger," and well deserves that name, for it is one of the most voracious of living creatures. The insect in the water at the lower part of the engraving—the one directly in the center—shows the larva as it usually appears. These "Water Tigers" may be found in pools and muddy ponds, and in still places along the margins of rivers, and, though not handsome to look at, they are very interesting to watch. If you wish to study their ways, you can easily catch them with a small net, and put them in an aquarium, or what is better, a jar by themselves, in which some water plants are placed. If you put them in an aquarium, there will after a while be little else left, at least of the smaller inhabitants, for they attack creatures much larger than themselves. It is difficult to say which is the most curious in the "Water-tiger," (which is a convenient and shorter name for the Dragon-fly larva), its head or its tail. Curiously enough, the creature breathes through its tail! You no doubt know that fishes breathe through gills placed in the head, and as the water flows over these, they take up the air that is dissolved in the water, and thus carry on a slow kind of breathing. But in the "Water-tiger" its gills are placed near its tail; it takes in water there through an opening, and forces it out again, and that is its way of breathing. But this opening answers another purpose. The animal crawls quite slowly, and as it is a great feeder, it would not get much food, did it depend solely upon its legs. If you watch one of them in search of food, you will be surprised to see the sluggish fellow dart for its prey with the greatest speed, and this motion is one of the many strange things about the creature. Ordinarily the water passes out of the opening in the tail quite slowly, but when necessary, the insect can force the water out with a sudden squirt, and that pushes it along through the water with great swiftness, upon the same principle that a rocket is sent through the air. Not less curious are the arrangements at the other end of the insect—at the head. As usually seen, it appears as in the figure at the middle of the lower part of the engraving, a quiet and rather harmless looking larva. But let a small insect or other animal come within reach, and, presto, the mild looking fellow shows a savage pair of pincers, and becomes the very tiger-ish animal seen in the right-hand lower corner of the engraving. This arrangement for taking its prey is called a "mask," and when not in use, is bent down under the head of the insect, and quite out of sight; it is so arranged that whatever is caught by the jaws of this mask, is brought, when that is folded under, right opposite to the true mouth of the insect, where it can be eaten. These Water-tigers not only prey upon other water insects, but even devour small fishes, and seem to live only to destroy and eat other living things. They go on feeding and growing, some one year, and some, it is said, for two years, when the time comes for them to change to perfect insects —to leave the water, and begin a new life in the air. You know that when caterpillars and most other insects—as I have shown you on several occasions —make this change, they go into the pupal state, and either spin a cocoon, or form a chrysalis in some way, remaining apparently lifeless for some time, and at length break their enclosing shell or skin, and come out a perfect butterfly, moth, or beetle. But the Dragon-flies are quite too busy to keep still, and even in the pupal state are as lively and greedy as ever. They change their skin, and show by a hump, where their future wings will be, and the eyes of the perfect insect may be seen under the skin, but as to keeping quiet, it doesn't know how. At last its time comes, and the pupa crawls up the stem of some plant, and leaves the water forever. Instead of breathing the water through its tail, it now has to breathe air through openings in its sides, and instead of propelling itself, rocket-like, through the water, it has to dart through the air, and for this it must have wings. All these are provided. The pupal skin at last bursts, and the perfect Dragon-fly slowly pulls itself out, as you see at the left hand of the engraving. At first the wings are damp, limp, and useless, but they gradually spread and dry—and what beautiful wings they are! They are worth a close examination; see the delicate frame-work, so curiously netted, with a beautiful membrane filling the spaces between; this is wonderfully thin and transparent, and the light often plays on it with rainbow colors. Can anything be more complete than this transformation—from an ugly inhabitant of muddy water, to a light and graceful creature of the air! But there is one thing which the Dragon-fly does not leave behind him with the remains of its former life—he has his appetite, and skims away through the air, devouring other insects, quite as effectively, as it did before as a "Water-tiger." There is one thing about the perfect insect, you will not fail to notice—that is the great eyes, or rather masses of eyes, as the microscope shows them to be; these, while the insect is alive, have beautiful colors; besides these, there are three little single eyes, usually placed in a row on the front of the head. So far from the Dragon-flies being dangerous, we may look upon them as not only harmless, but so far as they destroy mosquitoes, as really beneficial insects—at any rate, I hope that I have shown you that they are really interesting ones. I have said nothing about the scientific names of these insects, their being several different genera, or kinds, and only those who study entomology, will care to know the systematic names, but it is well to know that these belong to the division or sub-order *Neuroptera*, which means nerved-winged, and includes, besides the Dragon-flies, the May-flies, the Lace-wings, and besides others, the Caddis-flies, one of which I told you about, as the insect that builds a stone-house.

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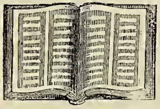

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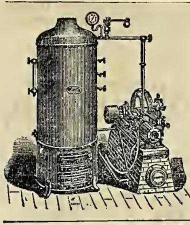

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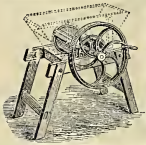

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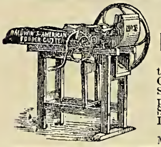

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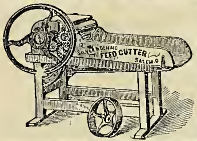
THE SILVER & DEMING FEED CUTTER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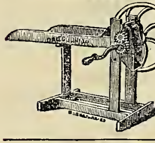

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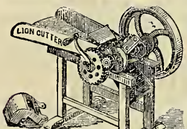

Lion Feed Cutter,

combining the latest best improvements. Also **Gale's Feed Cutters**, both cylinder and lever, and **Belcher & Taylor's Root Cutters.** For full description see page 340, Sept. No. *Am. Agriculturist*. For circular and price list address The Belcher & Taylor Ag'l Tool Co., Chicopee Falls, Mass.

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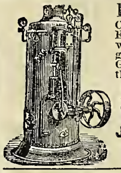

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PORTABLE
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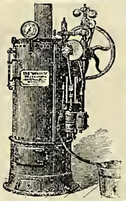

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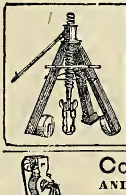

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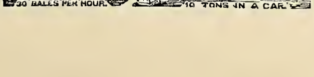
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30 BALES PER HOUR.
10 TONS IN A CAR.

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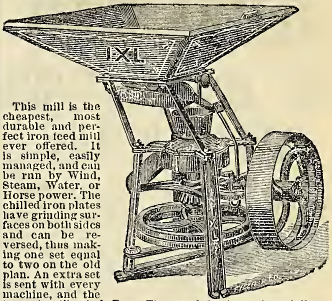

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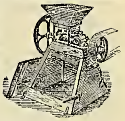

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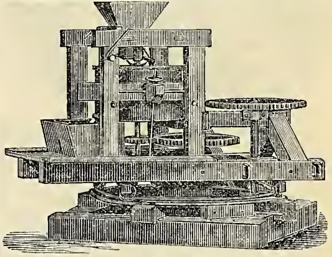

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Horse-Power and Grist Mill combined.
Friction avoided—Power & Space economized.
A long felt Want Supplied.
Every Farmer his own Miller.

This mill, with twenty inch stones, worked with two or four horses, will grind from three to five bushels of fine meal or flour per hour. It is simple and durable in construction, and can be easily managed by any farm hand. It occupies no more space than is required by any ordinary horse-power.

Price of the combined Mill and Horse-Power, **$250.**

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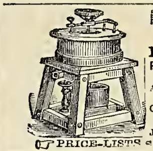

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MANUFACTURERS OF
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Portable Corn & Flour Mills,
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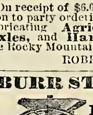

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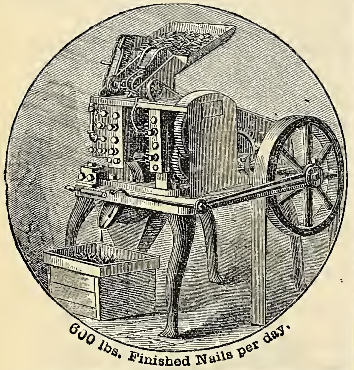
GLOBE NAIL.

THE BEST HORSE SHOE NAIL EVER MADE.

About ten years ago the **GLOBE NAIL COMPANY of Boston,** put on the market the first pointed, polished and finished Horse Shoe Nails ready for driving. Previous to that time all Horse Shoe Nails were pointed, and most of them made, by the shoers in their own shops at the rate of but six pounds per day.

The **Globe Nail** was at once found to be much cheaper and better than any then in use It soon became so popular that all manufacturers of Horse Shoe Nails were compelled to make their Nails to resemble the Globe. For the last ten years it has been the model. Each year the Nail has been greatly improved in quality, and to such a point have we educated the shoers that now they will hardly use a nail unless it is absolutely perfect


600 lbs. Finished Nails per day.

At the Centennial Exposition in Philadelphia, we were awarded the Medal and the following report, far stronger than that given upon any other Nail:

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Recommended for an Award of Merit.

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G. L REED, Clearfield, Pa.,
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T DIEFENBACH, Germany.
Group Judges XV.

We annex a sample of the testimonials we receive daily from all parts of the country:

ST. LOUIS, MO., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.

Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the Globe Nail, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals, —horses in particular,—I desire to say a few words in favor of **The Globe Nail.** Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the Globe Nail in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say **it has no superior in point of Toughness, Shape, and Finish, if it has any equal.** I have used about fifteen hundred pounds of Globe Nails a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. **I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat!** I am willing to pay, without any suit, for all horses that are lamed in my shop by using the Globe Nail. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,
(Signed,) P. H. O'NEILL,
Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary. P. H. O'N.

The best Horse is sure to win. SO CLEAR THE TRACK FOR THE

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The Universal Standard!

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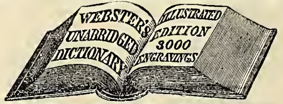

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we will with pleasure send you a sample copy of our **Monthly GLEANINGS IN BEE CULTURE,** with a descriptive price list of our latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all Books and Journals, everything pertaining to Bee Culture. *Nothing patented.* Simply send your address on a postal card, *written plainly,* to

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Culture of the Mind, books, libraries, and in general how to make farm life more beautiful and attractive.

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4	*Cake Basket.. (do. do. do.)*		$10 00	18	100
5	*Casters.... (do. do. do.)*		$ 5 25	13	55
6	*Casters.... (do. do. do.)*		$ 7 50	16	63
7	*Casters.... (do. do. do.)*		$10 50	19	120
8	*Butter Cooler (do.. do. do.)*		$ 6 50	15	60
9	*Pickle Jar and Fork. (do.)*		$ 5 00	12	50
10	*Syrup Cup with plate. (do.)*		$ 6 25	15	60
11	*Child's Cup (do.)*		$ 3 50	8	35
12	*Twelve Teaspoons (Meriden Cutlery Co.)*		$7 25	16	63
13	*One Dozen Tablespoons (do. do.)*		$14 50	22	147
14	*One Dozen Table Forks (do. do.)*		$14 50	22	147
15	*Ladies' Folding Pocket Scissors, (do.)*		$ 1 50	4	....
16	*Child's Knife, Fork & Spoon...(do.)*		$ 3 00	8	30
17	*French Cook's Knife, Fork, & Steel (do.*		$ 3 75	9	37
18	*Case of Scissors (U.S. Steel Shear Co.)*		$ 4 00	10	40
19	*Portable Writing Desk, (C. W. F. Dare)*		$ 1 75	4	....
20	*Walnut Work Box, (do.)*		$ 1 25	4	....
21	*Buck-Saw for Boys, (do.)*		$ 50	2	....
22	*Little Girl's Wash Set, (do.)*		$ 1 00	3	....
23	*Sled, (do.)*		$ 2 00	5	20
24	*Spring Horse, (do.)*		$11 00	18	110
25	*Boy's Wagon (C. W. F. Dare)*		$ 5 00	12	50
26	*Boy's Tool Chest, (E. I. Horsman)*		$ 1 00	3	....
27	*Boy's Larger Tool Chest (do.)*		$ 2 50	7	25
28	*Boy's Larger Tool Chest (do.)*		$ 5 00	12	50
29	*Pat. Magic Bellhead Pencil (Ludden & Taylor)*		$ 1 50	4	....
30	*Ladies' Magic Charm Pencil (do. do.)*		$ 2 00	5	20
31	*Gents' Magic Charm Pencil (do. do.)*		$ 2 75	7	27
32	*Gold Pen, Telescopic Case (do. do.)*		$ 2 50	7	25
33	*Gold Pen and Pencil, Elegant (do. do.)*		$ 5 50	13	55
34	*Knives and Forks (Patterson Bros.)*		$14 75	22	147
35	*Knives and Forks (do. do.)*		$18 50	28	185
36	*Carver and Fork (do. do.)*		$ 3 75	9	37
37	*Pocket Knife (Meriden Cutlery Co.)*		$ 1 50	4	....
38	*Pocket Knife (do. do.)*		$ 2 00	5	20
39	*Pocket Knife (do. do.)*		$ 2 75	7	27
40	*Ladies' Pocket Knife (do. do.)*		$ 2 00	5	20
41	*Multum in Parvo Knife (do. do.)*		$ 3 50	8	35
42	*Crandall's "John Gilpin"*		$ 1 00	3	....
43	*Crandall's "District School"*		$ 1 00	3	....
44	*Crandall's Masquerade Blocks*		$ 75	3	....
45	*Crandall's "Acrobats"*		$ 1 00	3	....
46	*Crandall's Building Blocks*		$ 1 50	4	....
47	*Crandall's "Menagerie"*		$ 2 00	5	20
48	*Pair of Skates (Patterson Bros.)*		$ 3 50	8	35
49	*Boudoir Clock (S. B. Jerome & Co.)*		$ 3 50	8	35
50	*Wire Bed Mattress (H. Buckingham)*		$12 00	19	120
51	*Houchin's Improved Patent Pocket Cook Stove*		$ 1 35	4	...
52	*Household Press, (W. A. Boardman)*		$2 00	5	20
53	*Aquapult, (Force Pump), (W. & B. Douglas, Middletown, Conn.)*		$ 9 00	17	90
54	*Self-adjusting Gold-plate Watch Key, (J. S. Birch.)*		$ 1 00	3	....
55	*Pocket Tool Holder (Miller's Falls Co.)*		$ 1 00	3	....
56	*Piano, Splendid 7-oct. (Steinway & So's)*		$650 00	625	....
57	*W. S. Blunt's "Universal Force Pump"*		$12 00	19	120
58	*Silver Watch (American Watch Co.)*		$30 00	44	....
59	*Bracket Saw (Millers' Falls Man'f Co.*		$ 1 25	4	....
60	*Payson's Indelible Ink—Pen, etc.*		75	3	....
61	*Excelsior Pocket Microscope (Bausch & Lomb Optical Co.)*		$ 2 75	7	27
62	*Abbott Pocket Microscope (L. G. Abbott)*		$ 1 50	4	....
63	*Cahoon's Broadcast Seed-sower*		$ 5 00	12	50
64	*Moore's Floral Set (Moore Man'f'g Co)*		$ 1 00	3	....
65	*Garden Seeds & Flower Bulbs (select'n)*		$ 2 00	5	20
66	*Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)*		$12 00	19	120
67	*Breech-loading Pocket Rifle (Stevens)*		$16 00	24	160
68	*Double Barreled Breech-loading Gun (E. Remington & Sons)*		$50 00	66	....
69	*Shot Gun (E. Remington & Sons)*		$ 6 00	14	60
70	*Shot Gun, breech-loader, (do. do.)*		$23 00	36	....
71	*Creedmoor Long Range Rifle No. 1 (do.)*		$100 00	110	....
72	*Creedmoor Long Range Rifle No. 2 (do)*		$85 00	100	....
73	*Creedmoor Long Range Rifle No. 3 (do)*		$60 00	76	....
74	*Hunting & Target Rifle (Remington)*		$22 00	34	....
75	*Vest Pocket Pistol (Remington)*		$ 3 75	9	37
76	*Revolver (Remington)*		$ 9 00	17	90
77	*Turn-table Apple Parer (Goodell Co.)*		$ 1 00	3	....
78	*Climax Apple Corer & Slicer (do.)*		$ 1 00	3	....
79	*Family Cherry Stoner (do.)*		$ 1 00	3	....
80	*Bay State Apple Parer & Slicer (do.)*		$ 1 50	4	....
81	*"Saratoga" Potato Peeler & Slicer (do.*		$ 1 00	3	....
82	*Sewing Machine (Remington)*		$50 00	66	....
83	*Family Scales (Fairbanks & Co.)*		$14 00	21	140
84	*Clothes Wringer (Best—Universal)*		$ 8 00	16	80
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92	*Any Back Vol. Agriculturist*	*Bound. Post-paid.*	$ 2 30	.....	25
93	*Any Two Back Volumes do.*		$ 4 60	.....	46
94	*Any Three do. do. do.*		$ 6 90	15	60
95	*Any Four do. do. do.*		$ 9 20	17	90
96	*Any Five do. do. do.*		$11 50	19	....
	—(Each ad'l volume at same rate)		......	.....	....
97	*Twenty-one Vols. XVI to XXXVI*		$48 30	66	....
98	*A* **$10** *Library (your choice.)*	*Sent prepaid by Mail or Ex's.*	$10 00	18	....
99	*A* **$15** *Library do.*		$15 00	24	....
100	*A* **$20** *Library do.*		$20 00	31	....
101	*A* **$25** *Library do.*		$25 00	38	....
102	*A Choice of Good Books. (See Description, p. 408.)*				

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AMERICAN AGRICULTURIST.

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The full Descriptions and Illustrations of the Premiums, with various Notes and Explanations, were published in 8 extra pages of our October number, which can not be repeated for want of space. Any one not having that number, can have one mailed, post-paid, for 10 cents; or a Premium Sheet only, will be mailed to any address without charge.

PREMIUM
Explanatory Notes.
N. B.

Read and carefully Note the following Items: The Table, on page 401, tells the *name* and *cash price* of each article, and (in last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each, but only a part of the premiums come under this head. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.)....(*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. Any one can have any time desired, up to next July, to complete any list, but every premium desired will be sent as soon as earned and ordered....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion at least should be *new* names; it is partly to get these that we offer premiums to canvassers....(*f*) One or two Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they are expensive, and should be used carefully and economically, and where they will *tell.* Other specimen numbers will be sent, post-paid, *to canvassers only*, for 10 cents each. The price to others is 15 cents....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk; otherwise it is not.

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 416.

The Georgia State Horticultural Society held its second Annual Meeting at Macon, on Aug. 2d. There was a remarkably fine display of fruits, flowers, etc. P. J. Berckmans, Esq., of Augusta, was re-elected President, and J. S. Newman, Esq., of Atlanta, Secretary. This new Horticultural Society, in addition to an active Agricultural Society, and a State Department of Agriculture, that is second in efficiency to that of no other State, show that Georgia is rapidly progressing in the things that make for peace and prosperity.

"Maize Cobs."—Nothing is more amusing than the way in which English writers blunder over green corn. In an article in a recent "Gardener's Magazine," headed "Maize Cobs," the writer, after giving the opinion that they are a very poor vegetable, gives directions for cooking them. "Put them into boiling water, with a liberal allowance of salt, but no soda. As a rule, 20 minutes fast boiling will cook them thoroughly, but in any case they must be cooked until tender. Drain them, and send them to the table on toast, and accompanied by good melted butter."—The article concludes by saying "they have not the qualities that constitute a truly popular vegetable," which shows that the writer has much to learn about "Maize Cobs," and cooking them.

The Popular Science Monthly, conducted by Prof. E. L. Youmans, and published by D. Appleton & Co., exactly filled a gap in our periodical literature, and while popular in the best sense of the word, presents us with articles by the ablest minds of both continents. Its prosperity is indicated by the publication of a monthly Supplement, half the size of the regular issue, and so wide is the range of articles, that one can hardly fail to find something to interest him in each number.

The Tomato Worm Again.—"Young Farmer," we have to answer your question every year. The large green caterpillar is not an attractive creature, but very amiable towards white folks. It does *not* bite, because it has hasn't any biters; it does not sting, because it hasn't any stinger. The affair on its hinder end is merely for grandeur and good looks. There is only one way to get rid of them, that is to pick them off—with gloves or without, as you prefer. Yes, it is "safe to eat the tomatoes" though your vines may be "full of the worms." The frost has done for the vines this year, but next season, do not let the fear of the worms deter you from saving the vines and the tomatoes.

Newspaper Horticulture. — We thought the "New York Tribune" served out a little the tallest horticulture of any of the city papers, but it is equaled by some one on the "New York Evening Post," which not long ago had the following: "There is at East Windsor, Conn., a flourishing apple tree, sixty years old, that bears good-sized but seedless apples. The seed cells are perfect, but a seed itself has never been found. The deformity is caused, it is said, by the tree growing upside down, having been started by bending the tip of a branch into the ground, and not cutting it from the parent tree until it had taken root." How it must grieve the excellent horticulturist who is at the head of the "Post," to meet such stuff in his own columns.

Grasses Named.—"W. H. C.," Louisville, Ky. The Reed Canary-grass, *Phalaris arundinacea*, a variegated form of which is the Ribbon-grass or striped grass of the gardens. It is not much valued agriculturally. An annual species of the *Phalaris* produces the canary seed...."W. R. F.," Clay Co., Nebraska. Your "Lagoon grass" is apparently a far western form of the Couch grass, *Triticum repens*, but to be sure, we should have a specimen with the root attached. The eastern form of what we take this to be, also called Quack, Quitch, and other names, is often very troublesome in cultivated grounds. It is much relished by cattle and makes good hay, but the servant is too apt to become the master to make it desirable to tolerate it on land to be tilled, but a cattle range is a different matter.

The Southern California Horticulturist.—At last we have something horticultural from California that smells of the soil. The second number of the above named journal is at hand, and we wish not only to give it our hearty welcome, but to especially commend it as just one journal that tells us what horticulturists are doing in California. A monthly may be filled with quotations from English and other journals, and the reader, unless he sees the title page, can not guess, whether it is published in California, Australia, or Timbuctoo. This is not the case with the journal in question. There are people in Los Angeles Co., and Southern California generally, engaged in the cultivation of fruit and other products of the soil. They have formed the "Southern California Horticultural Society;" this Society meets, its members talk, and talk sensibly, and this journal is their organ, and a very good organ it promises to be. We see San Diego represented in their meetings. Twenty-five years ago in February last, we found ourselves in San Diego; the only houses in the new town were those brought around Cape Horn, and were mere coops; preferring a firm foundation, we put up our tents, and set up housekeeping on the solid earth. After a while some one gave us a map of the place, and by taking observations, we found that we were encamped exactly where the City Hall was on paper. It is, of course, now a prosperous place, and is no doubt most favorable to fruit-growing.

Large Squashes.—John E. Rightmeyer, of Port Jervis, N. Y., claims that he has the "Champion Squashes," at least of Orange County. They were raised by Mr. Ottawa Moore, and weigh 215 and 123 lbs. respectively. Either may be regarded as large, and the heavier one remarkably so.—But how does Mr. R. know that they are not pumpkins?—Don't ask us what is the difference, as that is a conundrum we "gave up" long ago.

Preserving Chestnuts.—Punch's directions for "preserving peaches" was to lock the closet door and lose the key," and in preserving chestnuts for planting you have to guard against dryness, heat, and boys. If allowed to become dry they will not vegetate, and the safest way is to mix them at once with as much or more sand, not wet or yet too dry, but as it comes from a well drained sand bank, and keep them through the winter in a cool place. Worms do not attack the ripe chestnuts; the holes are made, not by worms getting in, but in going out: the egg was laid when the nut was young and soft, and the "worms" are already in them when they are gathered.

"The Scroll Sawyer."—In an article on scroll sawing, on another page, we mentioned that the subject already had a literature; since that was written, we have received the first number of a monthly paper with the above title, published in New York City.

Mr. Rickett's "Lady Washington."—The success of Mr. J. H. Ricketts, of Newburgh, N. Y., in raising hybrid and other new grapes is one of the most remarkable incidents in the horticulture of our times. We have before mentioned the marked excellence of the majority of his new varieties, and would now make a note of one we had not before seen, which he has named "Lady Washington." The berries are of medium size, the bunch above medium, double shouldered, and of the most delicate amber tint imaginable; the fruit, while quite sweet, has more character than is usually found in grapes of its color. If offered in the market the exceeding beauty of the fruit would make a sale for it, were it not half so good. This, if we mistake not, is the result of a cross between Iona and Concord; its foliage is as strongly native as that of any wild grape in the woods.

How long will Pollen keep?—It is probable that the length of time for which pollen will retain its fertilizing properties varies with different plants, as does the vitality of seeds. According to the "Revue Horticole," the pollen of *Ceratozamia Mexicana*, gathered in 1867, was successfully used to fertilize some female flowers in 1872. Of course it must be carefully preserved from dampness.

Orange Marmalade has long been a favorite adjunct to the breakfast of the writer. It was advised during recovery from a long illness, and the taste thus acquired has since often been gratified by the purchase of the only article then known in our stores, the "Scotch Marmalade," made at Dundee, Scotland, from bitter oranges imported from Spain. Not long ago Col. J. B. Oliver, editor of the "Florida New Yorker," who is wide-awake to all that relates to the material prosperity of Florida, made us acquainted with the fact that orange marmalade was made in Florida. It appears that Messrs. Ritchie & Co., experienced makers of the article in Scotland, have established a factory in Florida, utilizing the wild orange, which has heretofore been looked upon as a waste product. Without comparing the two side by side, we think that the Florida marmalade is at least quite equal to the imported. We look upon this manufacture with much interest, as it has already appreciably affected the value of the wild orange groves. Those who have wild orange trees in full bearing, if they can find a market for their fruit at even a low rate, will hesitate to convert them into groves of sweet fruit, which, while it will bring a much higher price, must be waited for, as it will take at least ten years to produce sweet orange trees bearing as abundantly as the well established wild ones. We wish this enterprise much success—and advise our readers when they buy orange marmalade to take the Florida in preference to the Scotch.

Grass for Different Soils.—"L. B. M.," Elmwood, Ill. For land that is partly covered with timber, Orchard Grass should be chosen; where the land is sometimes overflowed, Red Top is most suitable, where it is moist, but not overflowed, try Timothy.

New Zealand Flax.—"Subscriber," at Great Salt Lake City, Utah.—Your signature is not legible, or we should have replied by mail. The New Zealand Flax, (*Phormium tenax*), in its common and variegated forms, is not at all rare in greenhouses, and is often used in sub-tropical groups for decorating lawns. It is hardy in the south of England; how it will be with you can only be learned by experiment. It is generally multiplied by division; in consulting the English and French works on such plants, we find no reference to raising it from seed. Seeds of some related plants, if kept long, germinate very slowly, and if you have a greenhouse, it will be well to sow the seeds at once. If you have no greenhouse, the seeds must be kept until spring, and, as a matter of precaution, we would mix them with twice their bulk of dry sand, and keep in a dry place for the winter. The fibre is very strong, but very coarse, and if your correspondent has seen any "nearly as fine as silk," it was prepared differently from any that we have met with.

Parasite on Owls—"Better Direction."—Every now and then it happens that while we have copied an address exactly as given, a letter comes back marked, "Returned for Better Direction." This does not seem to have much to do with horned owls or their parasites, so we will explain. Almost a year ago Mr. O. Terrell sent us a strange looking insect which he found on the body of a Horned Owl. It being unlike anything we had any account of, we sent it to a gentleman who makes a specialty of the class of insects to which we supposed it belonged; he did not know it, and forwarded the specimen to Baron Osten Sacken, who is distinguished as an entomologist, as well as diplomatist, and he at once gave us the name of the insect as *Olfersia Americana*, with the remark that it was frequently found upon owls. Having the name of the specimen, but nothing of its history, we wrote to Mr. Terrell and his letter came back stamped as above. We take this method of informing Mr. Terrell that we did the best we could for him, and refer to the case just now—when we shall receive letters by the thousand, to enforce upon our friends the necessity for always giving their name and address in full. We have just now taken pains to reply to a letter at length, and find that the only address is Brooklyn, and no means of knowing if the writer is Mrs., Miss, or Mr. Having spent some time over the letter, we at a venture send it to Brooklyn, N. Y., but shall not be surprised to find it "Returned for Better Direction."

Preparing Brine.—"G." When pure salt, such as the Onondaga factory filled or the Ashton salt is used, it is not necessary to boil the brine. Boiling water may be poured upon the salt in a clean tub or barrel, the water should be well stirred, and when cool, the brine should be skimmed. Enough salt should be used to have some left in the bottom of the tub; the brine is then a saturated solution, and as strong as it can be made.

The Best Wheat Growing State.—"E. R. G.," Lancaster Co., Pa. The best spring wheat in the country is grown in Minnesota, and flour from Minnesota spring wheat, brings the highest price of any flour in the market. Just now the most profitable wheat growing is in Central Kansas, where many persons are largely cultivating this crop with considerable profit. There fall wheat is considered a sure crop. These two States just now offer the best inducements for largely and cheaply growing these kinds of wheat.

"Adamant Plow."—"J. G. D.," Corry, Penn., writes that he is dissatisfied with the "Adamant Plow," but does not say who is the maker, nor which "Adamant" plow it is. We feel sure there is some mistake in the case, and that some plow different from that mentioned recently in the *American Agriculturist*, is referred to, because we have been using one all summer, and have lent it to the neighbors so much, that it has been in constant use, and all who have used it agree in thinking it to be an excellent plow of very light draft, and clearing itself perfectly in all kinds of soil.

Catalogues Received.

Catalogues of dealers in all kinds of agricultural and horticultural stock and materials, form a class of literature, that possesses much interest and value. Of late years, instead of being a mere enumeration of the stock for sale, they generally give descriptions of the articles offered—at least of the new ones, and by presenting the author's experience, or methods of culture, are instructive, and we often find in them scraps of information, not to be found elsewhere. Unfortunately, they come in those fall and spring months, when our columns are always crowded, and we are unable to point out, as we should like, the characteristic features of the different catalogues, but must content ourselves with little more than a bare enumeration of them. It will save inquirers much trouble, if they understand that dealers—such as nurserymen, seedsmen, etc.—keep all the regular articles in their line, and unless we indicate that one is devoted to some specialty, it is safe to assume, that any of the standard and established articles in the line of his business, may be had from him. Where a business has several departments so distinct that separate catalogues are issued for each, the establishment is mentioned under the different heads, but where no separate catalogues are issued, the concern is placed under the head of the leading business, and mention made of the other departments.

NURSERYMEN.

George Achelis, Westchester, Pa.—A wholesale list of fruit and ornamental, including evergreen, trees, etc.

Bronson, Hopkins & Co., Geneva, N. Y.—General stock, with several specialties, including Russian and other apples of extra hardiness.

Bush, Son & Meissner, Bushberg, Jefferson Co., Mo., make a specialty of hardy grapes, and their autumn catalogue is a marvel of compact description.

J. Capps & Son, Mount Pulaski, Ill.—General list, including an immense variety of peaches. They also issue an annual "Journal," filled with interesting fruit talk.

S. C. De Cou, Moorestown, N. J., sends a special strawberry circular, but has a general nursery stock.

Robert Douglas & Son, Waukegan, Ill., make a specialty of evergreen and other ornamental tree seedlings. They raise evergreens on such a large scale, and offer the seedlings at such low rates, that it is cheaper, and much safer, for private planters to buy, than to raise them.

Ellwanger & Barry, Rochester, N. Y., have a stock so large and varied, that each department requires a separate catalogue, and the whole set bound together, makes a handsome volume. The lists of Fruits and of Ornamental Trees and Shrubs are quite up to the time.

H. M. Engle & Son, Marietta, Pa., send a full wholesale list, and offer three new peaches raised by them.

W. L. Ferris, Jr., & Co., Poughkeepsie, N. Y., offer a general stock, with specialties in small fruits, including Mr. Roe's new raspberry and gooseberries, which they grow under an arrangement with Mr. R.

Gibson & Bennett, Woodbury, N. J., offer general nursery stock, and as specialties the new strawberries and raspberries of Mr. Felton, which were first brought to notice at the Centennial Exhibition.

A. Hance & Son, Red Bank, N. J., send a full trade list of nursery and florist's stock, and special list of peaches and strawberries, many novelties in both.

Hoopes Brother & Thomas, Westchester, Pa., in their trade list offer a large assortment in every department of nursery stock, with greenhouse plants besides.

T. S. Hubbard, Fredonia, N. Y., makes a specialty of grape vines and wood, but has other stock.

J. Jenkins, Winona, Ohio, makes a specialty of grape vines and forest tree seedlings, and has a general stock.

R. S. Johnston, Stockley, Del.—A general wholesale list, very full in peaches of the newer sorts.

H. T. Jones, Rochester, N. Y., offers small fruits of all kinds, including the latest introductions.

Wm. S. Little, Rochester, N. Y., sends his wholesale list, which is very full, and includes several specialties in fruit and ornamental trees.

D. S. Marvin, Watertown, N. Y.—A special list of hardy grapes, and interesting, as it gives the origin of the different native varieties.

S. B. Parsons & Sons, Flushing, (L. I.,) N. Y.—Besides their retail catalogue, have a wholesale list of their remarkable collection, including camellias and azaleas.

F. K. Phœnix, Bloomington, Ill., has a wholesale list, full in every department, and offers special terms to clubs.

Thomas Meehan, Germantown, Pa., offers an immense stock at wholesale rates, and makes a specialty of forest tree seedlings and seeds.

E. Moody & Sons, Lockport, N. Y.—Though established in 1839, the catalogue shows that this venerable nursery keeps pace with the novelties.

William Parry, Cinnaminson, N. J., besides his regular price-list, publishes "Forty Years Among Small Fruits," in which he gives the results of an experience second, in variety and results, to that of no other.

J. C. Plumb & Son, Milton, Wis., make a specialty of hardy fruits for extreme northern localities, including several originated by them. Their advice to planters is clear and sensible.

H. M. Thompson & Son, St. Francis, Wis., deal especially in evergreen and forest tree seedlings, including the European Larch. Their catalogue is mainly devoted to interesting matter on the importance and profit of tree culture, and is a useful and creditable production.

B. F. Transou & Co., Humboldt, Tenn., offer fruit trees of varieties especially suited to the southwestern climate, and ornamental trees and shrubs.

Leo Weltz, Wilmington, Ohio, has general nursery stock, and a special catalogue to the Forest Rose Strawberry, a variety highly esteemed where it has been tested

E. P. Roe, Cornwall-on-the-Hudson, N. Y., issues a full circular on small fruits, which, like all Mr. R.'s productions, is fresh and interesting.

W. & T. Smith, Geneva, N. Y.—This well known establishment has a full wholesale list in every department.

F. Trowbridge, Milford, Conn., issues his Cranberry circular, and offers some new varieties.

A. R. Whitney, Franklin Grove, Ill.—Mr. W. is known as the originator of several choice Siberian apples, which he offers with other trees.

SEEDSMEN & DEALERS IN BULBS.

The autumnal catalogues of seedsmen are mainly devoted to Dutch bulbs and flower-roots, and to seeds of greenhouse plants. Most of them give full directions for the cultivation of bulbs in the house and in the border.

Beach, Son & Co., No. 7 Barclay St., New York City, present their bulb list in the Oct. No. of the "American Garden," which contains timely and useful articles.

R. P. Critchell, Carthage, Ohio, a descriptive and instructive special bulb catalogue.

W. H. Carson, 125 Chambers St., N. Y. City, in a characteristically neat catalogue, besides bulbs and directions for growing them, offers a full assortment of window gardening appliances, such as brackets, stands, pots, etc.

James Fleming, 67 Nassau St., N. Y. City, was the first to send his autumn catalogue of bulbs and other timely articles.

Peter Henderson & Co., 35 Cortlandt St., N. Y. City, offer, besides a full stock of bulbs, plants for winter-flowering, seeds for fall sowing, and a great variety of horticultural stock.

A. W. Livingston, Reynoldsburg, Ohio, is on hand with his list of vegetable seeds, with the "Acme" tomato as a specialty.

Nanz & Neuner, Louisville, Ky., offer bulbs and other plants for window gardening, seasonable seeds, etc.

Thomas Meehan, Germantown, Pa., sends a full list of seeds of American trees and shrubs, in which, we are glad to learn, he has a large European trade.

F. K. Phœnix, Bloomington, Ill., sends a special bulb catalogue, and a very full one, with a list of winter-blooming greenhouse plants.

J. F. Robey, Buda, Ill., offers western-grown vegetable seeds, flower seeds, and seeds for the farm.

J. M. Thorburn & Co., 15 John St., N. Y. City.—No bulb list exceeds this in fullness and value of its contents. Seeds for autumn sowing, grass seeds, etc., are offered.

James Vick, Rochester, N. Y., is always expected to do something surprising; he issued his heretofore remarkable catalogue as a quarterly, and now promises, in 1878, a monthly. Nothing succeeds like success.

FOREIGN.

Anderson & Co., Sydney, New South Wales, publish a supplementary list to their general catalogue, which for neatness and tasteful arrangement might be studied by dealers in older countries, while its offer of the newer American potatoes, Prickly Comfrey, etc., shows that our insular friends are not at all behind the times.

Wm. Bryce & Co., Glasgow, Scotland, and London, Eng.—Wholesale dealers in vegetable, agricultural, and tree seeds.

Wilson & Rankin, Glasgow, Scotland.—A wholesale list of agricultural and garden seeds.

FLORISTS—GREENHOUSE PLANTS.

L. B. Case, Richmond, Ind., issues his catalogue in the form of a quarterly, entitled the "Botanical Index," which promises to be useful to plant collectors.

Peter Henderson, 35 Cortlandt St., N. Y. City, in addition to his general plant catalogue, has a list of plants to flower in the parlor or greenhouse during the winter.

Tyra Montgomery, Mattoon, Ill.—Special rose and geranium catalogues, and one of general greenhouse stock.

George Such, South Amboy, N. J., in his autumn catalogue presents the latest additions to his remarkable collection of greenhouse and stove plants. The neatness of the catalogue is in keeping with the select character of its contents.

A. Troth, Memphis, Mo., presents his catalogue as a quarterly, and offers greenhouse plants and seeds.

MISCELLANEOUS.

Bees.—*J. H. Nellis*, Canajoharie, N. Y. Swarms, queens, and aparian supplies generally.

L. C. Root, Mohawk, N. Y.—Bees and queens, sample hives, smokers, extractors, and all bee-keepers' supplies.

Giant Powder.—*The Atlantic Giant Powder Co.*, 61 Park Place, N. Y. City, publish an account of the powder (Dynamite), and tell how to use it.

Optical Instruments.—*T. H. McAllister*, 49 Nassau St., N. Y. City, offer everything in their line, from a small microscope up to a large stereopticon.

Ornamental Iron Work.—*The Racine (Wis.) Hardware Manufacturing Co.* make ornamental house-furnishing goods, florists' baskets and brackets, window gardens, aquaria, and other articles in great variety. G. W. Peck, 110 Chambers St., is the New York agent.

Scroll Saws and Materials.—*G. Webster Peck*, 110 Chambers St., New York City, issues a very full catalogue of saws of all styles, woods, patterns, and everything required in scroll sawing.

Silk.—*L. S. Crozier*, Williamsburg, Manhattan Co., Kas., at Silkville, in the above town, carries on successfully the raising and the manufacture of silk. His circular gives information to those who would purchase eggs, and offers several varieties of the Mulberry.

* * *

Reports of Societies and Others.—Reports of Societies, Boards of Agriculture, and others, form a class of literature the character of which has been much improved of late years. Instead of the long and dreary essays formerly published, and which were of no other use than as padding, we now have reports of what was done and said, and unless of real value, only a brief abstract is given. These reports increase in value with time, and form an important part of a library for reference. Our limits do not allow of extended reviews of such publications, and we can give only a brief acknowledgement, at the same time expressing to the Secretaries and others our thanks for their courtesy in sending them.

The Aberdeenshire (Scotland) Ag'l. Association's report for 1876, is largely devoted to an account of elaboate experiments with the turnip crop, and illustrated.

The Journal of the Agl. Society of New South Wales. Part 3, July, 1877, naturally gives much space to sheep and wool.

The Kansas State Board of Agriculture issues Monthly Reports, which show how fortunate it is in having such a Secretary as Alfred Gray, Esq.

North Carolina's Commissioner of Agriculture, the Hon. Leonidas S. Polk, in his first quarterly report, shows that the State is on the right track in its agricultural matters.

The Report of the Connecticut State Board of Agriculture, by its Secretary, T. S. Gold, Esq., for 1876–77, maintains its excellent character. It includes the report of the work at the Experiment Station, by Prof. Atwater.

The U. S. Entomological Commission, consisting of Profs. Riley, Packard, and Thomas, have issued several bulletins giving the progress of their work, and conveying useful information, especially with reference to the Locust or Grass-hopper.

Destructive Insects of the Far West, including the Locust, are fully treated in Prof. A. S. Packard's report as Entomologist of Hayden's Geological Survey, and published by the Department of the Interior, in a separate, well illustrated volume of over 200 pages.

The Maine Pomological Society, in its report for 1876, gives carefully digested fruit lists of great local value, and papers and discussions of interest. It is fortunate in having in Mr. Geo. B. Sawyer, a most efficient Secretary.

The Ohio Horticultural Society sends its 10th Annual Report. As John A. Warder is President, and M. B. Bateham Secretary, it is sure to have much of value.

The Wisconsin State Horticultural Society's Report for 1876, and the Winter Meeting of 1877, shows that this is in no respect behind older associations in the interest of its transactions. A marked feature is the number of ladies who take an active part, more than one-third of the papers presented at the annual meeting, were by ladies.

Sewing Machines—Wilcox and Gibbs'.—This machine has been so long in use, that the time has gone by when it needs commendation, for in its original form it is as well known in families as any other machine. It is not too late to call attention to their new improvement, which is applied to their "Automatic Silent Sewing Machine." A description of this, together with what the makers propose, in view of the general reduction of prices by all the sewing machine companies, may be learned by sending to the Company (658 Broadway) for their circulars, which give full details.

Cure for Scab.—"J. W. D.," Lewiston Co., Texas. Kerosene oil is not a proper or safe cure for scab. A better application is Buchan's Carbolic Sheep Dip, or some others, described fully in Stewart's "Shepherd's Manual, (price $1.50). A cheap and good dipping arrangement is described in the same book. Every owner of sheep should have this manual, which is an American work designed for American shepherds.

Paralysis in Pigs.—"W. W. M.," Greenwood, Del. Young pigs are not unfrequently troubled with paralysis of the hind-quarters, or, as it is called, paraplegia. This disease has several causes; disordered digestion, nervous weakness, parasitic worms in the fatty tissues of the loins, or rheumatic affection, all produce it. A good remedy, in either of these cases, is to rub the loins with turpentine, and to give a few doses of one ounce of linseed oil with one teaspoonful of turpentine in each.

The Best Fodder Cutter.—"T. S. C.," Painesville, O. It is difficult to say which is the best. There are many good ones, and several of them were recently illustrated in the *American Agriculturist.* We use the Baldwin fodder cutter, made by C. Pierpont & Co., New Haven, Ct., and find it everything that can be desired.

New Hay in the Barn.—"E. D. S.," Spencertown, N. Y. Hay should not be put in the barn when wet with dew or water. If there is a little sap left in it, it will not matter much, if the barn is well ventilated. All hay and grain, when newly mowed away in a barn, undergoes a process of sweating, which is a fermentation of the sap left in it, a consequent heating, and evaporation of the moisture. If part of this moisture is carried off by means of good ventilation, the mass cools down, some of the dampness is absorbed again, and the hay or straw is left bright and sweet; otherwise it mildews. A tightly closed barn will cause mildew, because the moisture can not escape, and the contents become damp, not being able to absorb all the vapor. 100 lbs. of "air-dry" hay contain 14 lbs. of water; if more is left in it, it is damp, and must be injured by mold or mildew. A brisk current of air will carry off this excess of dampness; therefore we advise that the barn-doors be left open, when a brisk dry wind is blowing.

Some Western Cattle Men.—The business of raising sheep and cattle on the great western plains, is not only one of agreeable and healthful excitement, but when judiciously managed, is very profitable. Many young men from eastern cities are now engaged in this adventurous business. Amongst others might be mentioned Prof. Clarence King; Charles Motley, a nephew of the late J. L. Motley, the historian; L. C. Briggs, son of a Boston merchant; Wilbur Raymond, B. A., who is a nephew of the senior publisher of the *American Agriculturist*; Galusha A. Grow, Jr., and a nephew of Sidney Dillon, of the Union Pacific Railroad. All these young men are successfully engaged in their business during the summer, some of them leaving their herds in the winter, to make a visit eastward. There are abundant openings in Colorado, Kansas, Wyoming, and other localities, for the employment of industry and capital in this way.

Sheep in Colorado.—Figures from a trustworthy source—the books of the Assessor of El Paso Co., Colorado—show that the number of sheep in that county have greatly increased since 1872. Thus:

Number of sheep returned in	1872	37,000
" " "	1873	50,000
" " "	1874	58,000
" " "	1875	65,000
" " "	1876	74,000
" " "	1877	102,000

These figures show that the business is successful, notwithstanding failures of persons who have displayed remarkable ignorance and stupidity in their management of their flocks. Although there is a promising field for sheep in Colorado, judgment and common sense are necessary for success in herding and general management.

Brahmas for Eggs.—"J. H. J.," Keyport, N. J. The Brahma fowls are not the most desirable for eggs alone. There are other breeds that are more prolific in that way. But for both eggs and flesh, and their very quiet disposition altogether, they are perhaps the best farmers' fowl. The past three months is the moulting season, and hens that are growing their new plumage do not lay. If you want eggs and nothing else, you should keep either White or Brown Leghorns.

To Cure Egg Eating Hens.—"E. A. G.," Yostville, Pa., recommends that the shells of all the eggs used through the summer, be saved and given to the hens in the winter, when they will not care to break eggs. I may be worth while to try this method, but we have not much confidence in it. Hens may be prevented from breaking eggs by cutting off or filing the points of their beaks square. This does not prevent them from picking up their food, but when the hard points are removed they can not use their bills for breaking up anything.

The Cost of Producing Wheat.—"M. F.," Belair, Md. To know precisely the cost of a bushel of wheat, is a very simple thing; nothing more being required than to keep an exact account of all labor, seed, and fertilizers employed. The proportion of manure used up by the crop may be a matter of fact or of estimate. The following, copied from our farm account book, shows precisely what our fall-sown wheat costs up to the present time for one field of six acres, viz.:

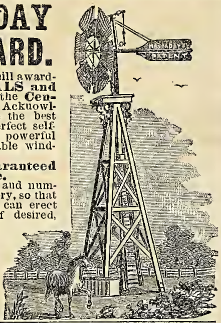
Plowing, 5¾ days, at $2.00	$11.50
Harrowing, ½ day	1.00
9 bushels Clawson wheat, @$2.10	18.90
Drilling 6 acres, @ 50 cts.	3.00
600 lbs. Ville's Complete Manure	15.00
Total	$49.40

This is very plain and easy to do, and yet not one farmer in a thousand keeps any such account. But it is absolutely necessary for the most profitable farming, to know what different crops cost.

To Remove a Wart by Acid.—"J. F.," Huntsville, Ala. To succeed in removing a wart by acid, the application must be continued until the wart is entirely eaten away, and a raw spot is left, This must be kept from bleeding by styptic or drying substances, such as powdered copperas, sulphate of copper, or a solution of sugar of lead, until the wound is gradually healed.

Buckwheat Bran for Cows.—"B. & W.," New Market Junction, N. H. Buckwheat bran when fed to cows, causes an increased flow of milk of a poor quality, giving very white butter. Otherwise it is a serviceable feed, but not nearly so valuable as wheat bran.

HALLADAY STANDARD.



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Every Mill Guaranteed as above.

Each piece fitted and numbered at the Factory, so that farmers and others can erect their own mills if desired, using our drawings and instructions for a guide. *Send for Illustrated Catalogue & Price List.*

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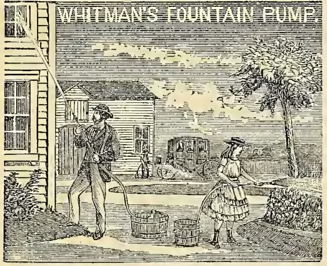
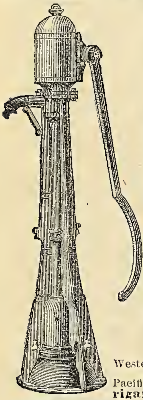

WHITMAN'S FOUNTAIN PUMP.

Garden Engine and Fire Extinguisher.

Protects Buildings from Fire, and Trees, Vines, etc., from Insects. Throws water 50 ft. Easily carried. No Dwelling, Country Home, or Factory, should be without the Fountain Pump. See description and illustration pages 178 and 180, *Am. Agriculturist*, May, 1877. Send for large Illustrated Circular. **J. A. WHITMAN,** Sole Proprietor and Manufacturer, **Providence, R. I.**



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Secured by letters patent.

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TOWN and COUNTY privileges for making **Driven Wells** and selling Licenses under the established **American Driven Well Patent,** leased by the year to responsible parties, by

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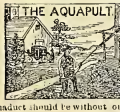
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are *cheap in price, handsome in appearance, accurate in performance,* and *durable in actual service.* They have Detached Lever Escapements, Heavy Metal Movements, and balance wheel like a watch, and consequently run in any position.

The "St. Nicholas," imitation morocco, (4½x4)	$2.00
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The "Cabinet," black walnut, (6x4½)	2.50
The "Boudoir," octagon, morocco, (5 in.), see cut	3.00
The "Roslyn," octagon Scotch plaid, (5 in.)	3.50
The "Melrose," Scotch plaid, (6x4½), mantel	3.50
The "Holyrood," polished white holly, (6x4½)	3.50

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(Six extra needles sent with each machine.)

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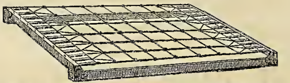

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Do not confound this with any woven wire mattress. Shipped to any R. R. Station in the U. S. and Canada **FREE of charges** on receipt of price, **$13.50. Send for Circular.**

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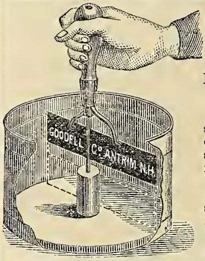
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(See illustration, which shows style of last two mentioned articles.)

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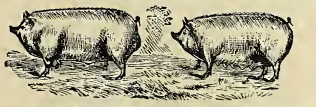

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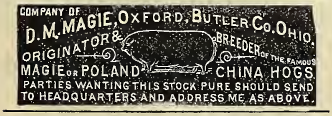

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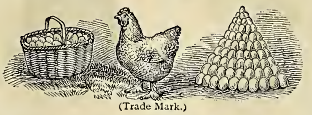

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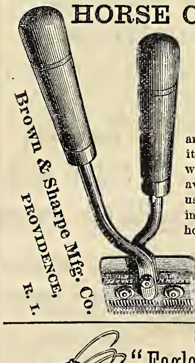

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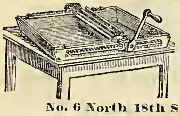

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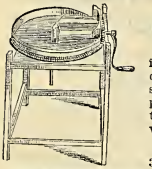

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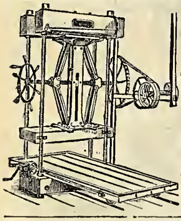

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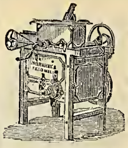

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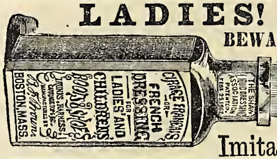

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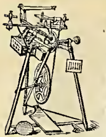

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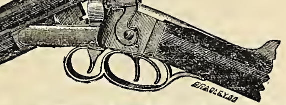

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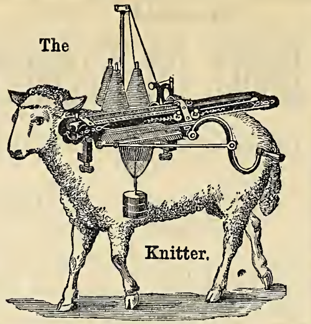

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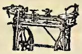

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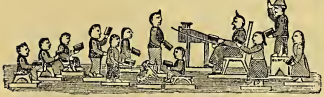

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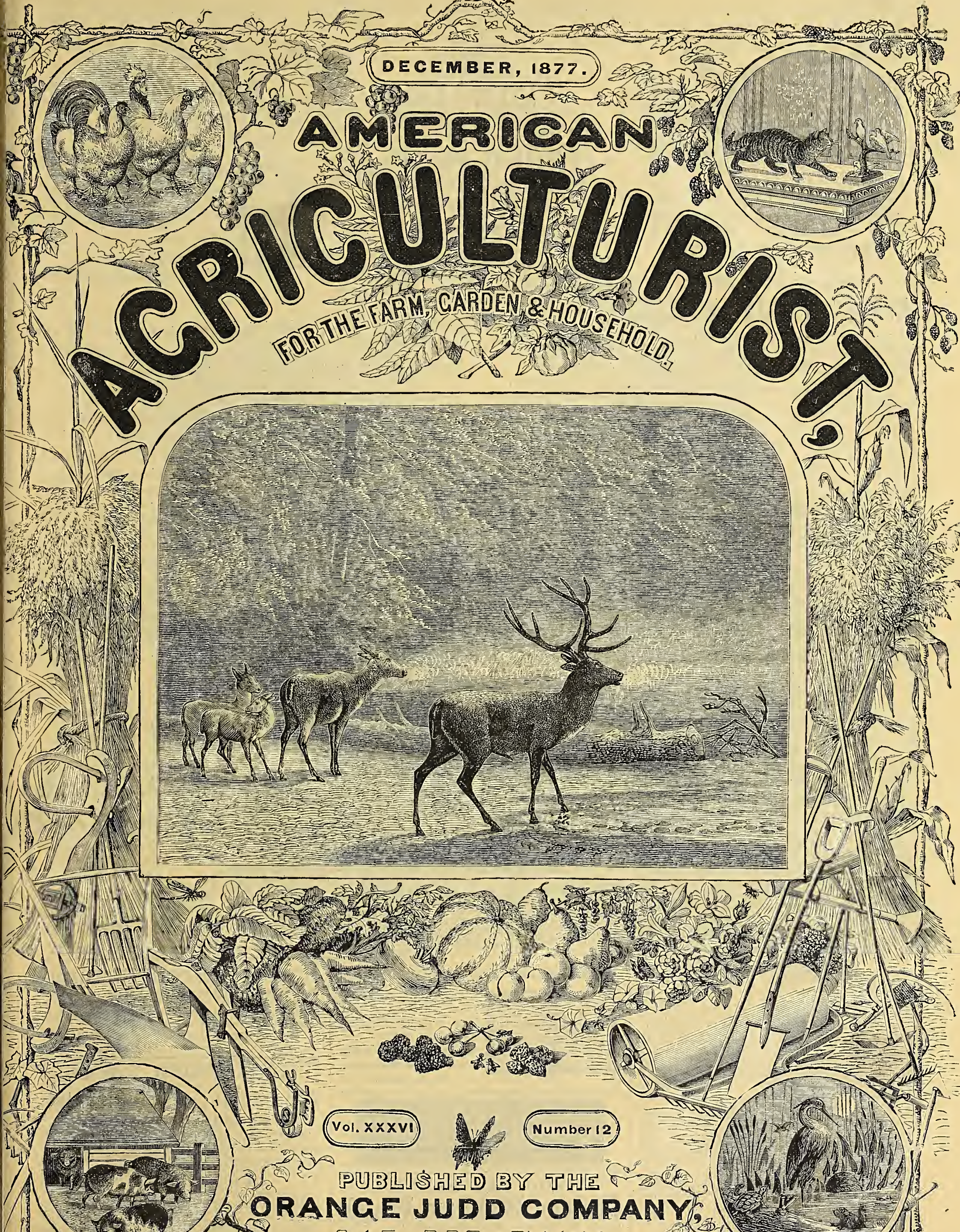

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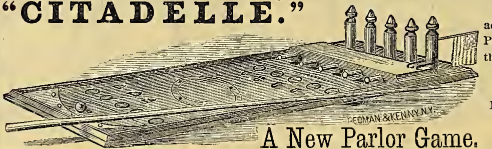
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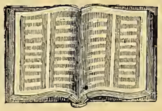

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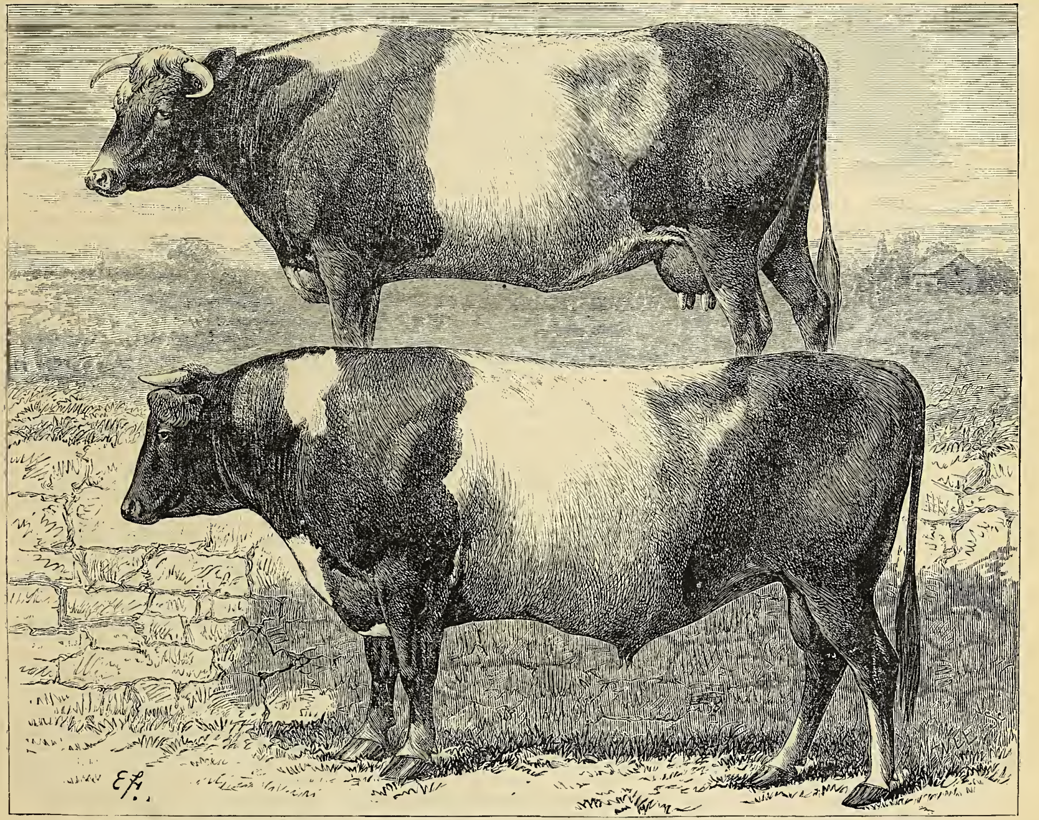

BELTED, SHEETED, OR DRAPED CATTLE.—*Drawn and Engraved for the American Agriculturist.*

In several parts of the country may be found, scattered here and there, specimens of a race of cattle so curiously and conspicuously marked, that they at once attract attention. These are known in different localities as "Belted," "Sheeted," and "Blanketed" cattle, from their having generally a broad band or belt of white around the middle, while all the rest of the body is black. The striking contrast between these very unlike and abruptly defined colors, gives a very picturesque and remarkable appearance to these animals, which is increased when they are seen gathered together into a herd. These cattle are descended from Dutch stock imported into this country many years ago. It does not appear that any systematic importation of them has been made, with a view to popularize them, nor have we been able, after much careful and somewhat troublesome inquiry, to learn of any recent or well authenticated importation at all. The tradition is that they were brought hither from Holland by some of the early settlers. Holland is their original home without doubt, for in that country this distinctly marked breed not only exists, but is preserved with care in Welde-Laken and Lakenfield districts in North Holland. The breeders of these localities make the preservation of the peculiar marking a distinct feature, and are careful to select as breeders only those animals which are likely to reproduce this peculiarity. This breed is closely related to the black and white larger breed, which has of late been brought from North Holland in considerable numbers, and which by some unfounded or perverse choice has been, and still continues to be, called "Holstein," instead of Dutch, as they should properly be designated. The fact that the peculiar marking of the cattle under consideration is so tenaciously held under adverse circumstances, and without especial care, proves the breed to be a very perfectly fixed and strongly characterized one; and therefore one that is very susceptible of improvement in the hands of an intelligent and competent breeder. These cattle have an excellent reputation for the dairy, and the fact that they are found most numerously in that noted dairy locality, Orange County, N. Y., shows them to be deserving of this reputation. That locality is the only one known to us where these belted cattle are kept in herds, or where they are to be seen in such numbers as to become a marked feature in the landscape, and attract the notice of a traveler, even if he is not interested in cows, dairies, or farming. They are hardy, easily kept, and when past the profitable milking age make fair butcher's stock. The illustrations given above are from a sketch of a pair in a herd kept near Middletown, Orange Co., N. Y. Many of the Orange County dairymen take especial pains with their herds, to keep them pure and preserve both their markings and good qualities. All these belted cattle breed very true to their markings.

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Depth of a Dairy House,—"W. W. M.," Delaware. To procure the requisite coolness, a below-ground dairy may be dug eight feet or more below the surface, with a lighted well a few feet above ground, for light and ventilation. We have seen an underground house of this kind made of brick, whitewashed inside, and thus lighted, twelve feet deep and twelve feet square, that was in every way satisfactory. Such a cellar, however, can not be made except in dry soil.

Calendar for December.

Day of Month.	Day of Week.	*Boston, N. England, N. York State, Michigan, Wisconsin, Iowa, and Oregon.*			*N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois.*			*Washington, Maryland, Virginia, Kentucky, Missouri, and California.*		
		Sun rises.	*Sun sets.*	*Mo'n rises.*	*Sun rises*	*Sun sets.*	*Mo'n rises,*	*Sun rises.*	*Sun sets.*	*Mo'n rises.*
		H.M	H.M	H. M.	H.M	H.M	H. M.	H.M	H.M	H. M.
1	S	7 10	4 28	3 31	7 5	4 33	3 29	7 0	4 39	3 27
2	S	7 11	4 28	4 47	7 6	4 33	4 43	7 1	4 38	4 38
3	M	7 12	4 28	6 3	7 7	4 33	5 56	7 2	4 38	5 51
4	T	7 13	4 28	sets	7 8	4 33	sets	7 3	4 38	sets.
5	W	7 14	4 28	4 47	7 9	4 33	4 54	7 4	4 38	5 2
6	T	7 15	4 28	5 48	7 10	4 33	5 55	8 5	4 38	6 3
7	F	7 16	4 28	6 53	7 11	4 33	6 59	7 6	4 38	7 5
8	S	7 17	4 28	8 0	7 12	4 33	8 5	7 7	4 38	8 11
9	S	7 18	4 28	9 4	7 13	4 33	9 8	7 8	4 38	9 12
10	M	7 19	4 28	10 8	7 14	4 33	10 10	7 8	4 38	10 12
11	T	7 20	4 28	11 9	7 15	4 33	11 10	7 9	4 38	11 11
12	W	7 21	4 28	morn	7 15	4 33	morn	7 10	4 38	morn
13	T	7 22	4 28	0 9	7 16	4 33	0 9	7 11	4 39	0 9
14	F	7 22	4 28	1 7	7 17	4 33	1 6	7 11	4 39	1 5
15	S	7 23	4 28	2 14	7 18	4 33	2 11	7 12	4 39	2 9
16	S	7 24	4 28	3 21	7 18	4 34	3 17	7 13	4 39	3 13
17	M	7 24	4 29	4 30	7 19	4 34	4 25	7 13	4 40	4 20
18	T	7 25	4 29	5 41	7 20	4 35	5 34	7 14	4 40	5 27
19	W	7 26	4 30	6 50	7 20	4 35	6 43	7 15	4 41	6 36
20	T	7 26	4 30	rises	7 21	4 36	rises	7 15	4 41	rises
21	F	7 27	4 31	5 45	7 21	4 36	5 52	7 16	4 42	5 58
22	S	7 27	4 31	7 4	7 22	4 37	7 10	7 16	4 42	7 15
23	S	7 28	4 32	8 26	7 22	4 37	8 29	7 17	4 43	8 31
24	M	7 28	4 32	9 41	7 23	4 38	9 43	7 17	4 43	9 45
25	T	7 28	4 33	10 56	7 23	4 38	10 57	7 17	4 44	10 57
26	W	7 29	4 34	morn	7 23	4 39	morn	7 18	4 44	morn
27	T	7 29	4 34	0 9	7 24	4 39	0 8	7 18	4 45	0 7
28	F	7 29	4 35	1 22	7 24	4 40	1 19	7 18	4 46	1 17
29	S	7 30	4 36	2 36	7 24	4 41	2 31	7 19	4 47	2 27
30	S	7 30	4 36	3 50	7 24	4 42	3 45	7 19	4 47	3 39
31	M	7 30	4 37	5 1	7 24	4 43	4 53	7 19	4 48	4 49

PHASES OF THE MOON.

MOON.		BOSTON.	N. YORK.	WASH'N.	CHA'STON	CHICAGO.
	D.	H. M.	H. M.	H. M.	H. M.	H. M.
New M'n	4	5 20 ev.	5 8 ev.	4 56 ev.	4 44 ev.	4 14 ev.
1st Quart	12	4 50 ev.	4 38 ev.	4 26 ev.	4 14 ev.	3 44 ev.
Full M'n	20	7 7 mo.	6 55 mo.	6 43 mo	6 31 mo.	6 1 mo.
3d Quart.	27	1 36 mo.	1 24 mo.	1 12 mo	1 0 mo.	0 30 mo.

AMERICAN AGRICULTURIST.

NEW YORK, DECEMBER, 1877.

With this month closes another year, and one which leaves the nation better off than it has been for some years past. The agricultural interest has especial causes for gratification. The harvests of 1877 have never been excelled, in our history, in quantity and quality, and we have wider markets for our produce than ever before. As agriculture is the foundation of all national industries, when that prospers, others partake of its prosperity. This result reacts, and, as a consequence, farmers soon experience a better demand and higher prices for their produce. We are therefore very hopeful for 1878. The fall season has been very favorable for winter sown grain, and for plowing for spring crops, and so far as can be seen, a continued improvement of our condition is indicated. Much of this general improvement results directly from better methods in carrying on our industries. Economical appliances to save labor and money, are in general use, while improved seeds, plants, and live stock, are coming into greater favor. We are prepared to take advantage of the opportunities offered, and avail ourselves of the markets of those countries that are more thickly populated than our own. While we have been sending immense quantities of meat and live cattle to England, we have made an opening in the French markets, and expect to have that nation for a purchaser of our meat. So, through the improvement of our cattle, by the use of pure Shorthorn blood, we are able to supply the Europeans better and cheaper meat from our vast pastures, than those people can produce with all their lauded superiority of methods. American farming is now equal to any in the world; our farms, generally, are notably cleaner and freer from weeds than foreign ones—with some exceptions—and if we would use our native fertilizers, such as bones, blood, and meat refuse, fish guano; our native foods, such as linseed and cotton seed oil-cakes, instead of selling them to our foreign competitors; and also use those artificial fertilizers which are so cheap and effective, as an aid to increase our crops, we could excel the famed English farms in the product of the fields. We have this yet to do. All that is needed is intelligence and confidence, that the more liberally we feed our soils, the more bountifully they will reward us with teeming harvests.

Hints for Work.

[The suggestions under this and the following headings, are never reprinted from previous years, but they are always prepared fresh from the latest experience and observation, by men who "practice what they preach," and preach from what they practice.]

Labor is very Cheap, good farm hands can be procured at the present time for lower wages than we can remember. This is a favorable time for making all such permanent improvements as draining, fencing, building, getting out posts and rails, clearing land, removing stones or stumps, and the like.

Cheap work should be done by cheap labor. One skilled man, supervising, can direct several common laborers or boys, and save money.

Piece Work is always the cheapest. To know how much should fairly be paid for any work, the employer should know exactly how much can be done in a certain time. For example, let him split 100 rails, or measure a rod of ditch and dig it, or have a good man do it while he is watched, and then note the time required as a basis for calculation.

Clear Fields and Smooth Roads are necessary when machinery is used. All work to this effect done now, will be doubly repaid in saving of time, labor, and repairs in harvest time, or in the preservation of the machines.

After the Field Work is done, look to the house, and make that and all about it comfortable, without delay. Where water lodges, grade the surface so as to carry it away from the building. Fit eaves-troughs and leaders to the house. Double sash in the cellar windows will keep out frost and admit light. Never heap manure about cellar windows, bundles of corn stalks are best for this purpose. Provide a place for ashes, house slops, and other waste. Remove heaps of rubbish, and everything that will cause snow drifts.

Good Shelter for the Stock is absolute economy; with warmth there must be an ample supply of pure, fresh air. The time may come when we shall find coal cheaper than the extra food needed to sustain vital heat under extreme cold, and use fire heat for our animals. At present we must keep our stables as warm and dry as we can; but pure air, with severe cold and plenty of food, is preferable to warm, impure stables, with food saved.

Regular Feeding, if not generous, is better than food given in excess for a few days, and then stinted, or food given plentifully, but at irregular periods. Animals do not thrive unless perfectly contented, and never permitted to get hungry. The same hours for feeding should be kept regularly throughout the whole season.

A Good Hay Cutter will save its cost in one season. Hay or straw is not made more nutritious, but it is more easily masticated when chaffed; and a saving of exertion is equivalent to a saving of food.

Straw, when cut and mixed with two quarts of corn-meal to the bushel, is equal to the same quantity of the best hay. Read over again Professor Atwater's articles on the feeding values of fodders, and the improvement of coarse hay and straw, in March, April, and May, 1876.

Horses should be fed in proportion to their work. An idle team may be wintered upon good hay alone; when working lightly, a feed of grain at noon, will be sufficient with hay morning and night. With heavy work, 10 quarts of ground corn and oats, and chaffed straw or corn-fodder, will be good feeding, and in many cases, for small horses, less will do. Good grooming is necessary for health in winter.

Ground Gypsum spread upon the floors, will prevent the pungent odor common to stables. This vapor of ammonia is hurtful to horses' eyes, and the frequent cause of ophthalmia, and resulting blindness, with which so many horses are troubled. Throw a few pailfuls of water upon the floor first, and then scatter around a shovelful of the gypsum.

Fresh Air should enter the stables at the bottom, and the foul air escape at the top. Make small sliding doors for ventilation, and cover them with wire netting or laths, to exclude vermin.

A Pair of Cards should be kept in every stable for use on cows and oxen. To clean these animals from adhering filth, before carding them, use a hoe that has been worn down in the garden, with the handle sawn off a foot long, then use the card until the hide is clean. Card well about the neck and other parts which an animal's tongue cannot reach.

Cows in Milk may be made greatly more profitable by feeding wheat middlings freely; it will pay to feed as high as four quarts of corn-meal, and three of wheat middlings, to some cows producing butter, the butter is increased in quantity and improved in quality and color. The kind of cow, however, is important, as some will fatten upon this feed, while others will only increase in milk and cream.

Calves and Yearlings may be made to increase in size and weight considerably, and make a large quantity of fine manure, by keeping them in a roomy shed, bedding them deeply with cut straw, or leaves, and feeding well. With plenty of bedding, the shed need not be cleaned out until spring.

Sheep and Lambs should be kept and fed separately, else the stronger will crowd and rob the weaker; when in separate pens each thrives better, as the food can be properly apportioned. It is convenient to make as many feeding stalls around the feed racks as there are sheep, each large enough for one sheep only, then a weak one will have a secure place from which it can not be dislodged. Of course the feed should be evenly placed in the rack.

Roots are better pulped, than cut, for sheep. There are very cheap machines that cut roots into fine shreds or pulp, which will soon save their cost in the improved condition of the animals thus fed.

Pigs will thrive all the better if kept warm and dry. Every piggery should have a close pen warmed by a stove, for early arrivals of young pigs, (one such as was described in the *American Agriculturist* last month for warming a poultry-house, would answer the purpose well). Many a litter of pigs dropped in the middle of winter might be saved by having some means of keeping them warm. A good fire, a blanket for the sow, and a drink of warm gruel, would thus be found worth many dollars every year.

Poultry.—Early pullets will now lay, if treated to a mess of warm food once a day. Our plan is to put in a large pan a quantity of coarse corn-meal, (8 quarts is sufficient for 100 fowls), cover it with hot water, and put the pan into the oven until the meal has soaked up all the water. A few handfuls of Bowker's Animal Meal is then mixed into the mess, and one handful of Imperial Egg Food is sprinkled over it and also stirred in. Half of this is given in the forenoon hot, and the rest at night, every other day. The alternate days we give wheat screenings in the morning, and whole corn at night; plenty of pure water is always accessible. The fowls are as productive as can be desired, and pay better than any other stock on the farm.

Keep Accounts.—If no accounts have been kept, a beginning of a better system should be made now. At the close of the year make an inventory of every article, and value them, and also put down the debts owing and due. This will show how one stands at the close of the year. By keeping strict accounts of one's business, it is not only known what goes out and what comes in, but by noting every expenditure and income, we can readily find where we gain or lose; foolish or unwise spendings are thought over a second time, and this naturally leads to avoiding them in the future.

Notes on Orchard and Garden Work.

The work for autumn and early winter has been indicated in the two or three preceding months in so full a manner, that but little remains to be added. Though a favorable fall has allowed operations to be carried on much later than usual, it is likely that December will, as usual, put a stop to nearly all outdoor work; still there are a great many jobs that may be profitably done even at this season, and there need be no days of absolute leisure to the energetic cultivator. It is not too early to lay plans for the coming season, to see where the mistakes of the past may be remedied, and what improvements may be introduced.

Orchard and Nursery.

Care of the Orchard, whether young or old, will require good fences and gates to keep out intruders of all kinds. A stray ox or horse may cause serious damage in a young orchard. Protection from mice and rabbits was fully described last month.

Fruit in Cellars is likely to suffer from heat rather than cold. In the slow operation of ripening, heat and carbonic acid are given off. Whenever the temperature approaches 40°, the outer air, if colder, should be let in to reduce it. In the house cellar, the accumulation of carbonic acid would be injurious to the health of the family, and it is highly important that this be removed by ventilation. In fruit cellars apart from the house, this is not necessary, as the presence of this gas, so injurious to animal life, tends to preserve the fruit, as it excludes the atmospheric air.

Cions.—The sooner they are cut, the better. Select healthy shoots of the past season's growth, from trees known to be true to their name; tie in convenient bundles, label, and pack, to prevent drying, in fresh, damp sawdust, or in slightly damp sand, and keep in a cool cellar.

Root-Grafting is done at any time during winter, the stocks having been taken up and placed in a convenient place. The roots, after grafting, are placed in boxes, with sufficient earth to prevent drying, and kept in a cool cellar.

Seeds, whether of fruit or ornamental trees, that were not sown in fall, are almost without exception better kept in moist sand; indeed, some can not be preserved in any other way. The proportion of sand should be so large that the seeds will be well separated, and there will be no danger of heating, and germinating prematurely. On this account, they should be kept in a cool place. Few seeds are injured by cold, and the boxes may be placed out of doors if properly covered to keep out rain.

Manure may be carted to the orchard, and spread over the whole surface. The time of manuring is not of so much importance as to get it on at any rate. It is a mistake to put a little manure close around the trunks of the trees.

Pruning.—No question is more frequently asked than: "When shall I prune?" If the cutting is such as may be done with a knife, it makes but little difference when it is done, but if on old and neglected trees, where large wounds are to be made, it is better to do it when the severe cold weather is over, but before vegetation starts. In the climate of New York, late in February and early in March.

Fruit Garden.

Pruning of currants, gooseberries, grape vines, omitted in the fall, may be done now on mild days.

Covering of strawberries and tender raspberries should be done if not already completed. In covering strawberries, do not get the material too thick over the plants. An inch or so is better than more.

Care of Fruit and other matters are mentioned in last month's Notes.

Kitchen and Market Garden.

It is supposed that all the crops are cared for as directed in last month's Notes. Among those usually left until the last is:

Celery, concerning which there is an article on page 470, which will prove useful to those in mild localities who have not yet put away their crop; and those who have already their celery in trenches may find it convenient to transfer a part to boxes for ready access in stormy weather.

Covering of roots in pits, celery in trenches, etc., etc., should be governed by the weather, and its thickness be increased as it becomes colder. Spinach in all but mild winters is better if covered, though but little should be put over the plants themselves, but the bulk of the straw or hay used in covering should be between the rows.

Cabbages will need their final covering of earth. See last month's Notes on preserving these and the methods of utilizing soft cabbages.

Preparing the Soil.—The weather is often mild enough to allow of manuring and plowing, or spading, the soil in preparation for spring crops, and wherever this can be done, it is a great gain, but only in case the soil is not too wet to work.

Cold Frames not only require daily attention, but in mild weather twice a day. As stated last month, the object is to keep the plants perfectly dormant. When the weather is mild, the thermometer at 30°, or above, the sashes should come off altogether, and there will be but few days in the winter, unless in heavy snows, when the sashes may not be more or less tilted at the upper end, to air the plants.

Seeds.—Clean and put away; overhaul the stock and discard all of doubtful value. As soon as the catalogues are out, study them, and order early.

Manure is the essential to success in gardening, and to increase the supply, to convert everything that may be useful into manure, and allow no fertilizing material to go to waste, will be constantly kept in mind during this and all the winter months.

Flower Garden and Lawn.

But little can be done here beyond keeping all neat and in order, and in giving protection to such half-hardy things as need it......Compost, or thoroughly decomposed manure, may be spread over the lawn; if this can not be had, it is better to rely upon artificial fertilizers than to use crude manure full of seeds.....Evergreen boughs stuck around or tied to half-hardy evergreens and other shrubs, are a much better protection than the old method of bundling up with straw....If snow accumulates in evergreens, shake it out before it hardens, and if a heavy fall covers the lower limbs, shovel it away, else in settling it may break them down....Make a snow plow and open paths after each snow, and if there are places where persons are tempted to "cut across lots," put up a temporary wire fence or other obstruction.

Greenhouse and Window Plants.

Nearly all that was given under this head last month is applicable now, and novices in flower culture will find on page 476, some hints, which, though intended for children, are none the less useful to older persons, as they especially treat on one of the mistakes that novices are most apt to make—overwatering....While most of the Cactus Family are kept in a state of rest during the winter, this is not the case with all; the varieties of *Epiphyllum* or "Crab's-claw Cactus" bloom in autumn and early winter, and consequently need water while blooming and making their growth afterwards....Insects may be kept in check by constant care, but if they once get the upper hand the plants suffer. Those who can not conveniently use tobacco smoke, should apply tobacco water, made from tobacco stems, about the color of strong tea....Much may be done with window plants by the use of the thumb and finger, an old tooth brush, and a sharp pointed stick or quill toothpick—these last to carefully pick off mealy bugs and scales of all sorts as they appear. If the plants are frequently looked over, and every form of insect life at once suppressed, it will seldom be necessary to use any other means....Bulbs that were potted and placed in the cellar, must not be allowed to get dry, and when the pots are well filled with roots, bring a few at a time to the light and they will soon start into growth....Hanging baskets are best managed by giving them a soaking in a pail or tub. The earth may, in a dry warm room, get dried quite through to the center, and ordinary watering have no effect; an occasional soaking will prevent this....Dust is one of the great annoyances to the window gardener; and may be avoided in part by covering the plants with a cloth or paper screen while sweeping, but this will not avoid the necessity for an occasional sponging of all smooth-leaved plants, and a thorough showering of those with hairy leaves. In mild weather this may be done by setting the plants outside and giving a syringing or a showering from a watering pot, not forgetting to lay the pots on their sides, so that the under surfaces of the leaves may be reached by the water. In cold weather this may be done in the kitchen sink, or better still, in a bath tub.

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TO THE
American Agriculturist.

We have a very pleasant announcement to make. It has been customary of late years for many journals to annually present their readers with a Chromo, and this journal has done its part in sending out beautiful pictures that now adorn hundreds of thousands of homes. Very many have asked "What will you offer for 1878?" The business has been so overdone by cheap, worthless, distorted daubs, that we have hesitated about longer competing with the trashy things sent out, and when last summer a boy offered to "black yer butes and give yer a ten dollar chromo for 5 cents," we surrendered.—But we have for months past been looking earnestly for some Souvenir, some Keepsake, to send to our readers, that would be not only interesting, but really and eminently useful to all, and WE HAVE FOUND IT!

After examining many things, it occurred to us that one of the most desirable, interesting, and *practically useful* things would be some convenient form of the *Microscope*, if a good one could be had within the limits of price, etc. *A Microscope is really valuable to* **Farmers**—*to detect, distinguish, and aid in remedying diseases on plants and animals, whether from insects, decay, or smut, mildew, lice, scab, etc.; to detect adulteration in seeds, and their degree of goodness or badness, the proportion of fertile and infertile seed; also adulteration in fertilizers, ground bone, etc.; to examine wounds and bruises, extract slivers from the hands, etc., etc. The Microscope is equally useful to Gardeners, Florists, Fruit-growers, etc., for most of the above purposes and for many others.*

The Microscope is useful to **All Classes,** *to detect adulterations in food, as in coffee, tea, spices, sugar, and to examine the texture and defects of many articles.*

As a source of **Instructive Amusement,** *the Microscope is exceedingly valuable to Children, to Young people, and to grown people.* The beautiful forms and structure of the most minute flowers, of insects, etc., are wonderful when examined by even a Microscope of very moderate power. The dust on the wing of a butterfly or moth becomes, under the glass, most beautiful feathers or other forms. The mold on cheese or on a moldy shoe becomes to the eye a forest-like growth. The structure of the soil under our feet, its curious mixtures of crystals and broken rocks, are interesting to examine. A drop of spirits of camphor put on the glass is seen shooting into wonderful crystals, as the liquid evaporates. *Hundreds of other things may be examined, furnishing varied instruction, and most elevated entertainment. As an interesting Toy, nothing else equal to a fairly good Microscope can be given to Children.*

Impressed with the value and desirableness of an instrument which would accomplish the above, we set about examining the various low-priced Microscopes and magnifying glasses to be found here, or imported. Two difficulties were met with. First, the cheap instruments found, were all of poor quality, and lacking some facilities in working; and, second, anything having the perfection of lens and other parts which we could commend, would cost far too much to be introduced into every family. We found no microscope costing less than $2.75 having the principal requisites of one we desired to find—such as triple lenses, stand, adjustability to use reflected and transmitted light, etc., etc.

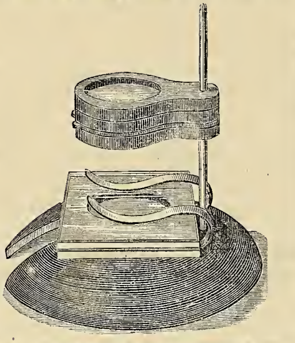


Fig. 1.—MICROSCOPE WITH ALL LENSES IN USE.

Next, the query came up: Is it not possible, by means of improved machinery for grinding lenses, and for making each part, and by doing this on a very large scale, to get the desired Microscope at such an exceedingly low cost that every one of our readers could have one?

To this end, we entered into consultation with the Bausch & Lomb Optical Company, the inventors and manufacturers of the Excelsior and higher grade Microscopes, and of many other optical instruments, who enthusiastically seconded and aided our efforts to the utmost of their skill and ability. A large number of experiments have been made, many forms and combinations of lens and stand, etc., have been constructed, machinery has been devised for rapid and perfect work, and as the result, we have A MOST VALUABLE MICROSCOPE, which we now place before our readers with a satisfaction that is certainly very great to us, and will doubtless be pleasing to *every* reader of this journal.

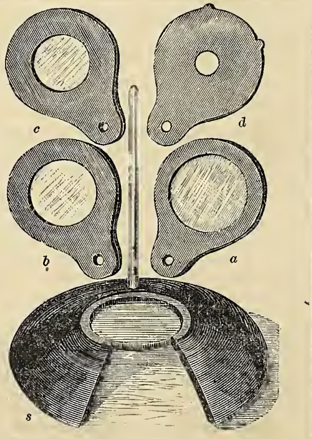


Fig. 2.—STAND—LENSES—DIAPHRAGM.

Description of the Microscope.

The Microscope is shown in the engravings herewith. The three Lenses (*a*, *b*, *c*, fig. 2) are of superior glass, carefully ground, adjusted to use separately and in combination, and each one is in a polished hard rubber setting. The lens *a* (Fig. 2) magnifies about 6 *diameters* or 36 *areas* or surfaces; *b* magnifies about 8 diameters or 64 areas; *c* magnifies about 10 diameters, or 100 areas; *b* and *c*, used together, magnify about 18 diameters, or 334 areas. The three used together magnify about 25 diameters, or **625 areas.** Used singly, or in combined pairs, and triplet, SEVEN *different magnifying powers are obtained*, of from 6 to 25 diameters, or from 36 to 625 areas. It will thus be seen that by using, as in fig. 1, all three lenses upon a minute object or part of an object, its surface or area will be magnified or expanded **625 times!**

A Diaphragm, *d*, is used to cut off distortion and render the field of observation distinct. (Full explanations of the use and mode of using each part, with many illustrations, to aid all to the proper management of the instrument, will accompany each microscope sent out.) The three lenses are joined on a hollow rivet, so that they can be removed from the stand to use as hand-glasses, single or combined, as shown in fig. 5. They can be carried in the pocket, if the glasses be protected by a covering (as a soft leather bag or wrapper, made from buckskin, or an old glove.)

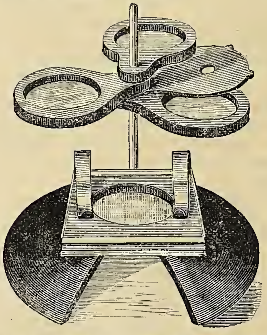


Fig. 3.—LENSES ETC., SHOWN SEPARATED.

The *Stand* (fig. 2,) has a base, *s*, of polished hard rubber, with an opening to admit light underneath. In the top of the base is a fixed glass stage, *z*, upon which to place objects to be examined. Two thin plates of glass (fig. 4,) are provided to lay over this, between which flat objects may be placed. The water-proof *Cell*, (fig. 6), with a central aperture, can be placed between the glass plates, forming a cavity for liquids, for small insects, seeds, etc., etc. These plates and cell are held firmly in place by the Metallic Clips or Springs, so that the instrument can be set on the table or held in the hand for opaque objects, or *be held up to the light* when examining transparent or other specimens which are best seen by light passing *through* them.—The whole is inclosed in a neat Case or Box, with cover, for carrying and keeping.

Terms of Supplying the Microscope to Our Subscribers.

We labored and studied long, night and day, trying to devise an instrument, and new machinery for manufacture, to get something that would be so low in cost, that we could absolutely *present* one to every reader, and two such instruments, with a single lens, were first adopted. *But* when we found that by a little more expense, comparatively, we could get up a complete instrument, like the one above described, with *three* lenses, diaphragm, etc., we concluded it would be far better to adopt this, and thus send out such a complete instrument, and trust to our readers to share a small part of the cost (and only a part). *No instrument so well made,* *so complete and desirable, has hitherto been offered to the general public at so low a price as* **$2.50.** With the improvements in mode of manufacture, and the great number contracted for, this instrument will be supplied at retail for *only* **$1.50.**

BUT to every actual subscriber to the American Agriculturist for 1878, one of these Microscopes will be supplied complete for 40 cents above the subscription price, and to the club subscribers at only 33 to 35 cents above the club subscription rates when taken at the office or its delivery provided for. The Publishers will pay for the additional cost of manufacture—a large sum in the aggregate.

HERE ARE THE TERMS:

(The *American Agriculturist* will be sent post-paid from receipt of subscription to the end of 1878. The Microscopes will be delivered as provided below.)

One Subscription and *One* Microscope	$2.00	
2 Subscriptions and **2** Microscopes	$3.80	($1.90 each.)
3 Subscriptions and **3** Microscopes	$5.25	($1.75 each.)
4 Subscriptions and **4** Microscopes	$6.60	($1.65 each.)
5 *to* **9** Subscribers and **1** Microscope each	$1.60 each.	
10 *to* **19** Subscribers and a Microscope each	$1.55 each.	
20 Subscribers and a Microscope each	$1.44 each.	

Or, in clubs of 20 and upwards, $1.10 for each subscription, and 33⅓c. for each Microscope, (that is, $1 extra for every *three* Microscopes, in all clubs of twenty or more.)

☞ It will thus be seen that the **$1.50** Microscope (really worth *at least* **$2.50,** as compared with anything ever before offered) can be obtained by any regular subscriber to the *Am. Agriculturist* for 1878, and by such only, for the small extra cost of only 33 to 40 cents, as above. This is surely getting *double* value for one's money, and *more.*

Delivery of the Microscopes.

I. Any subscriber for 1878, will receive the Microscope on calling or sending for it at the Office, 245 Broadway, without expense, save the small payment of 33 to 40 cents above stated, which is only a part of the actual cost of manufacture alone.

II. Whenever there is a club of subscribers at any place, one of their number can be appointed to receive the Microscopes for all, and have them come by express, making the cost of carriage but a few cents each. We will pack them safely without charge, and forward them in any way directed, on receipt of the names for whom they are to be supplied, with the small extra sum for the Microscopes stated above.

III. During the remainder of 1877, we will undertake to deliver them to any part of the United States, and Upper and Lower Canada, on receipt of 15 cents for each Microscrope, for *payment of carriage.* We can only promise this for the present year, as we have not yet been able to make express and other arrangements extending beyond December 31, 1877. If this can be continued, it will be announced hereafter.

IV. Our subscribers in foreign countries, not named above, will need to provide for, and direct how the Microscope shall be forwarded to them.

Any *Subscriber already on our books for* 1878, can have a Microscope by remitting 40 cents, adding the 15c. more if to be sent prepaid. Any one who has sent a club of three or more, can receive a Microscope for each member of his club on remitting 33⅓ cents each, and cost of carriage to the address, if to be sent prepaid.

N. B.—The Microscope is designed for **all** subscribers on our books for the *American Agriculturist* for all of 1878, no matter from whom received. We repeat, that the receipt of 40 cents from any subscriber for 1878 will entitle him or her to one of the Microscopes, to be taken at the office, or if to be sent prepaid, on receipt of 15 cts. to pay for carriage, except to foreign countries, as named above.

To all not subscribers the price will invariably be $1.50 each, and cost of delivery if we deliver it.

Order of Delivering Microscopes.

They are now being made; 3,000 will be ready by the time this paper reaches most of our readers, and the manufacture will be pushed forward rapidly, as fast as machinery for making them can be constructed—probably several thousands a week.

☞ They will be sent out in the order of receipt of names—first come, first served.

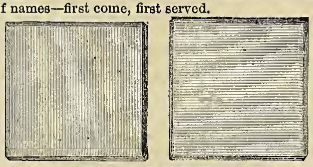


Fig. 4.—GLASS PLATES.

The General Premium List not Affected by the Microscope Offer.

Our General Premium List (page 481) will go on just the same, and all the offers hold good. Those having collected names for the Premiums, and those who do so hereafter, will receive the premiums just the same. To have any subscriber on the lists receive the Microscope, it is only necessary to collect and send 40 cents for each single Microscope, or $1 for each *three* Microscopes to be supplied, and payment for their delivery, if to be sent prepaid by us. Simply send the cost of the Microscope and cost of delivery, if to be sent paid by us, *in addition* to the $1.60 or $1.10 in the Premium Table. See page 481. The Microscope will greatly aid all collecting Premium Clubs. Every family, everywhere, can well afford the full price for the Microscope alone, making the paper practically free.

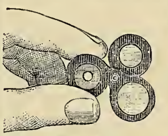


Fig. 5.

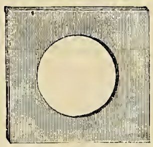


Fig. 6.

What Scientific Men Think of Our New Microscope.

It is, of course, unnecessary among our own readers to enforce or fortify what we say concerning the Microscope; yet it may interest some to read what others think of it. We sent one of the first complete instruments to PROF. RICE, Professor of Geology and Natural History, who has classes in Microscopy, and largely uses a variety of these instruments. The Microscope next went to Prof. ATWATER, well known to our readers by his contributions to this Journal, and as Director of the first successful Agricultural Experiment Station in this country:

WESLEYAN UNIVERSITY,
Middleton, Conn., Nov. 12, 1877.

Orange Judd Company, New York:

Gentlemen:—I have examined with great pleasure the Microscope devised by you, and made under your auspices, and called the "AMERICAN AGRICULTURAL MICROSCOPE." *It is a beautiful little instrument. Its Lenses, singly and in combination, give a range of power from seven to about twenty-four diameters. It can be used both with reflected and with transmitted light. If you can sell it for Two Dollars, you will thereby render a real service to the community. I know of no Microscope sold so low as $2 which is equal, or nearly equal, to this in excellence. It is not a mere toy, but is well adapted for use in botanical analyses, and other scientific studies, which require the aid of a simple form of Microscope.* *Yours truly,* WM. NORTH RICE.

....*I have examined your Microscope with great satisfaction, subscribe fully to what Prof. Rice says of it, and recommend it heartily, not only to Farmers, for examining fertilizers, feeding materials, and seeds that are liable to adulteration, dairy products, plants, and minute animal organisms by which they are apt to be injured, but also to all intelligent people who wish a Microscope, and can not afford an expensive one. It is decidedly the best thing for the price of $2 that I have ever seen, and I hope it will be widely introduced and used. Yours respectfully,* W. O. ATWATER.

Some Wonders of the Microscope.

The unaided eye takes a very limited range of objects. To see the *whole* of anything a hundred feet square only, it must be so distant that its details of surface are imperceptible. An object a hundredth part of an inch in diameter becomes a mere dot to the eye. Of the "innumerable stars," the eye sees but a thousand above the horizon. The great telescope at Washington reveals 56,000,000 stars, and probably there are millions and billions more still undiscovered; indeed, is there a place where there are no stars beyond? Each star is believed to be an immense sun, with great planets or worlds revolving around it....Go the other way;—there are plants and animals, too small for us to see—millions, millions of billions times more numerous than all we can see. Last summer, with our large microscope we examined and *measured* animals (animalculæ) moving rapidly about in the tiniest drop of our aqueduct water, of which it would take 10,600,000,000, to fill up a single cubic inch, that is, eight times as many as there are people on the whole earth. The fine powder, called Tripoli, used for polishing because it is so fine, contains in a single inch the skeletons of some 40,000,000,000 (*forty billions!*) of organic plants that have lived and grown. The Microscope shows that on the duckweed there are perfect animalculæ (little animals) so small that 10,000,000,000 of them would no more than equal a single hemp seed in bulk. Many specimens of foul or ditch water contain animals so minute that a drop would hold myriads of them with ample room for them all to move about. Some of these seen under a powerful microscope look like wriggling monsters, as they are. Of course revelations like these are only possible by using strong compound Microscopes that magnify hundreds of diameters, and thousands of surfaces, yet it is worth while to get, when possible, even an instrument that will magnify 50 to 500 areas, and thus look a *little way* down into the world of small objects every where around us. Such an instrument is now obtainable by any one, as detailed in other columns of this paper.

How a Microscope Magnifies.

The illustration (fig 7) will explain this. *L* is a single glass lens with curved surfaces. A ray of light going from the top of the arrow is bent downward in passing through and out of the glass, and the eye sees the feather end of the arrow in the direction of the upper dotted line. On the contrary, the ray of light from the point of the arrow, meeting a different curve of the lens, is bent upward, and the eye sees this ray in the direction of the lower dotted line. Rays from all other points of the arrow are similarly bent, and if the glass be perfectly formed, they will all meet in the eye, and the length of the arrow will thus be greatly magnified, and its minute points be clearly seen. In the engraving, the arrow is enlarged in length only 6 times. That is the power of this lens, it magnifies 6 diameters or lengths. But the glass being spherical it magnifies sidewise also: so a flat, small object is spread out every way 6 times, or is enlarged in surface 6 times 6, or 36 times the original surface. As the light on the original object is spread out over many times the surface, objects to be magnified should have strong daylight (not the direct sunlight), or a good lamp-light. Directions are given in the descriptive sheet accompanying each *American Agriculturist* Microscope. By curving the lens surface more, greater magnifying power is obtained, but with high power at the expense of clearness, owing to "spherical aberration," or distortion, as it is termed. This is in part remedied by using two, three, or more lenses; by a diaphragm to cut off the outside rays from the edges of the lens; by an arrangement of layers of different glass in the lens; by compound Microscopes, etc. The *American Agriculturist* Microscope, with its 3 lenses, its diaphragm, and special care in preparing and grinding the glasses, does away with the aberration as much as possible. It is a mistake to suppose a large Microscope, or lens, is needed for ordinary use. The higher the power, the smaller must be the lens, to avoid aberration. The object glass (lens) in our great Microscope is scarcely one-eighth of an inch in diameter. The Lenses in the *American Agriculturist* Microscope are just the size shown in the engravings.

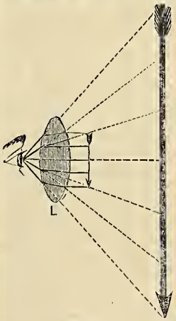


Fig. 7.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions for the month ending Nov. 12th, 1877, and for the corresponding month last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	394,000	4,201,000	3,516,000	403,000	1,114,000	1,503,000
26 d's *last* m'th	403,000	4,113,000	3,419,600	329,000	974,000	1,107,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 d's *this* m'th	429,000	5,941,000	4,267,000	428,000	1,043,000	1,397,000
26 d's *last* m'th	441,000	5,913,000	4,851,000	437,000	353,000	1,329,000

2. *Comparison with same period at this time last year.*

Receipts.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1877..	391,000	4,201,000	3,516,000	403,000	1,114,000	1,503,000
26 days 1876..	321,000	2,196,000	2,815,000	207,000	419,000	1,437,000
Sales.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
26 days 1877..	429,000	5,944,000	4,267,000	428,000	1,043,000	1,397,000
26 days 1876..	312,000	2,117,000	2,643,000	141,000	199,000	1,436,000

3. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Nov. 5, 1877..	984,374	2,643,502	166,949	368,429	1,770,759	328,388
Oct. 8, 1877..	288,693	2,975,828	28,526	69,046	881,326	370,166
May 7, 1877..	761,686	468,809	193,046	174,375	347,881	291,654
Feb. 7, 1877..	3,083,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Aug. 7, 1876..	2,831,299	904,557	94,960	53,914	1,232,895	434,208
Apr. 10, 1876..	3,393,074	232,140	68,429	200,381	706,282	436,942
Jan. 10, 1876..	5,802,293	663,982	100,741	325,191	1,080,300	307,433

4. *Exports from New York, Jan. 1, to Nov. 8.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1877.	1,410,000	16,881,000	20,784,000	1,915,000	1,391,000	411,000	323,000
1876.	1,672,115	21,949,300	15,152,703	978,796	29,223	574,000	9 2,000
1875.	1,622,6 3	22,616,004	11,948,115	159,952	225	117,481	288,030
1874.	1,899,775	33,079,216	17,506,617	584,465	3,320	106,342	321,249

5. *Tide-water Receipts at Albany, from opening of navigation to Nov. 8th:*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
'77..	14,600	9,812,300	20,341,700	1,074,000	2,853,700	3,510,500	554,500
'76..	27,800	10,089,700	10,221,700	698,800	1,878,700	2,645,200	634,500
'75..	97,500	17,114,400	7,920,900	181,400	2,160,700	2,168,600	596,300
'74..	129,200	21,295,600	17,141,800	263,2 0	1,693,500	2,795,600	....
'73..	128,200	20,192,600	17,195,500	914,500	1,667,600	3,040,206	....
'72..	104,100	7,801,400	25,484,200	357,300	2,119,000	5,075,300	....
'71..	233,000	18,134,000	18,124,000	707,200	2,578,000	4,833,200	....
'70..	356,600	13,918,300	4,584,300	529,900	2,306,800	5,210,900	....

CURRENT WHOLESALE PRICES.

	Oct. 12.	Nov. 12.
PRICE OF GOLD	103	102 5-8
FLOUR—Super to Extra State	$5 15 @ 6 35	$4 80 @ 6 00
Super to Extra Southern	5 15 @ 8 75	4 90 @ 8 75
Extra Western	5 75 @ 10 00	5 40 @ 9 75
Extra Genesee	6 35 @ 7 75	6 00 @ 7 50
Superfine Western	5 15 @ 5 65	4 90 @ 5 35
RYE FLOUR	3 75 @ 4 65	3 75 @ 4 45
CORN-MEAL	2 60 @ 3 50	2 70 @ 3 40
WHEAT—All kinds of White.	1 40 @ 1 58	1 38 @ 1 55
All kinds of Red and Amber.	1 15 @ 1 50	1 15 @ 1 47
CORN—Yellow	60 @ —	63 @ 65
Mixed	58 @ 60	61 @ 63
White	65 @ 63	64 @ 65
OATS—Western	31 @ 42	34 @ 44
State	35 @ 44	37 @ 45
RYE	68 @ 80	66 @ 78
BARLEY	70 @ 95	68 @ 97½
BARLEY MALT	75 @ 1 25	70 @ 1 25
HAY—Bale, ℔ 100 lbs	40 @ 85	40 @ 90
STRAW, ℔ 100 lbs	35 @ 65	35 @ 65
COTTON—Middlings, ℔ lb	11½ @ 11⅝	11⅛ @ 11¼
HOPS—Crop of 1877, ℔ lb	8 @ 13	5 @ 15
" old, ℔ lb	2 @ 7	2 @ 6
FEATHERS—Live Geese, ℔ lb	40 @ 50	45 @ 50
SEED—Clover, ℔ lb	8½ @ 8¾	8½ @ 8⅞
Timothy, ℔ bushel	1 40 @ —	1 35 @ 1 45
Flax, ℔ bushel	1 40 @ 1 45	1 45 @ 1 50
SUGAR—Refi'g & Grocery ℔ lb	7½ @ 9⅝	7 @ 9⅜
MOLASSES, Cuba, ℔ gal. 50 test	— @ 38	— @ 40
New Orleans, ℔ gal	40 @ 56	32 @ 64
COFFEE—Rio (Gold)	16 @ 20	15½ @ 19¼
TOBACCO, Kentucky, &c., ℔ lb.	4½ @ 15	4 @ 15
Seed Leaf, ℔ lb	4½ @ 50	4 @ 50
WOOL—Domestic Fleece, ℔ lb	28 @ 55	26 @ 55
Domestic, pulled, ℔ lb	30 @ 38	28 @ 38
California, spring clip	13 @ 31	12 @ 31
California fall clip	10 @ 25	10 @ 25
TALLOW, ℔ lb	7¾ @ 7⅞	7⅝ @ 7¾
OIL-CAKE—℔ ton	33 00 @ 33 50	34 00 @ 35 50
PORK—Mess, ℔ barrel	14 35 @ 14 45	14 25 @ —
Extra Prime, ℔ barrel	10 00 @ 10 50	— @ —
BEEF—Extra mess	13 00 @ 14 00	13 00 @ 14 00
LARD, in tres. & bbls, ℔ 100 lb	7 00 @ 9 75	8 00 @ 9 25
BUTTER—State, ℔ lb	15 @ 35	15 @ 35
Western, poor to fancy, ℔ lb.	14 @ 35	12 @ 35
CHEESE	5 @ 13¾	5 @ 13
EGGS—Fresh, ℔ dozen	19 @ 22½	22 @ 26
POULTRY—Fowls & Chickens	10 @ 18	10 @ 15
Turkeys—℔ lb	12 @ 17	10 @ 15
Geese, ℔ pair	1 00 @ 2 00	1 25 @ 2 00
Ducks, ℔ pair	50 @ 90	50 @ 90
Roosters, ℔ lb	6 @ 9	6 @ 8
DUCKS, Wild, ℔ pair	25 @ 75	30 @ 65
GROUSE, ℔ pair	80 @ 90	85 @ 1 00
PARTRIDGE, ℔ pair	40 @ 75	40 @ 80
PLOVER, ℔ doz	1 00 @ 1 25	1 25 @ 1 37½
SNIPE, per doz	30 @ 1 25	30 @ 1 37½
WOODCOCK, ℔ pair	60 @ 70	50 @ 65
VENISON, ℔ lb	15 @ 20	14 @ 18
HARES, ℔ pair	— @ —	40 @ 50
TURNIPS ℔ bbl	60 @ 75	60 @ 75
CABBAGES—℔ 100	1 00 @ 2 25	1 25 @ 3 50
ONIONS—new, ℔ bbl	1 00 @ 1 50	1 00 @ 1 25
LETTUCE, ℔ bbl	50 @ 1 00	50 @ 1 00
CARROTS, ℔ 100 bunches	1 00 @ —	87 @ 1 00
POTATOES—new, ℔ bbl	1 25 @ 2 00	1 25 @ 2 00
SWEET POTATOES—℔ bbl	1 75 @ 2 25	1 75 @ 2 25
TOMATOES, per box	20 @ 30	20 @ 30
BEETS, ℔ bbl	1 00 @ —	50 @ 1 00
PEAS—Canada, in bond, ℔ bu.	85 @ 86	83 @ 85
green, ℔ bush	1 30 @ 1 40	1 40 @ 1 50
BEANS—℔ bushel	1 70 @ 2 75	1 80 @ 2 75
BROOM-CORN	— @ —	3½ @ 7½
PEPPERS, ℔ bbl	1 00 @ 1 50	1 25 @ —
APPLES—℔ barrel	1 00 @ 2 75	1 00 @ 3 50
CAULIFLOWER, ℔ bbl	— @ —	1 00 @ 3 00
OKRA, ℔ 100	15 @ 20	15 @ 20
PEANUTS, domestic, ℔ bush.	1 15 @ 1 45	1 00 @ 1 30
GRAPES, ℔ lb	3 @ 10	4 @ 9
PEARS, ℔ bbl	2 00 @ 7 00	1 25 @ 10 00
QUINCES, @ bbl	— @ —	4 00 @ 8 00
CRANBERRIES—℔ bbl	5 00 @ 7 00	5 00 @ 6 50
" ℔ bkt	1 00 @ 2 25	2 00 @ 1 00

Gold has been up to 103⅜, and down to 102⅜, closing Nov. 12, at 102⅝, as against 103 on Oct. 12; 103⅜ on Sept. 12: 105⅜ on July 12; 104⅞ on June 12; 107¼ on May 12; 104⅝ on March 12; 106 on January 12, 1877; and 109½ on the 12th of November, 1876....A brisk business has been reported in the leading kinds of Breadstuffs, but at variable prices. The Wheat movement has been of unusual magnitude, in the way of receipts, sales (largely on speculation), and exports, The export clearances hence of Wheat for the week ending Nov. 3, reached over 2,400,000 bushels—the largest aggregate for one week in a long period of time. Toward the close, prices of Flour and Grain generally exhibited more firmness, on less urgent offerings, and a very good inquiry, in part for shipment. Barley and Oats continued in request for export. The Barley shipments, on the new crop, have thus far been quite important....Cotton has been less sought after, and at the close, quoted weaker in price... Provisions have been more freely dealt in, in good part for shipment, but closed tamely and, as a rule, easier in price....Hay has been comparatively quiet, but quoted steady....An active movement has been reported in Hops, the receipts and sales of which have been to unusually liberal aggregates—the sales mainly for export—and prices left off more firmly....Seeds have been of ready sale, and generally held with more confidence as to values, but closed slightly in favor of buyers... Wool has been in less request and somewhat depressed in price, on freer offerings of most kinds of domestic product....Tobacco, Naval Stores, and Petroleum have been moderately active, but unsettled as to prices....Groceries lower and in less demand... Ocean freights weaker, on a more liberal supply of accommodation. ..Grain rates by steam to Liverpool closed on the 12th of Nov. at 8@8½*d.*; to Glasgow at 8@8½*d.*; to London at 8*d.*; to Liverpool, by sail, 7½*d.*; London, by sail, 7½*d.*. per bushel. Flour to Liverpool, by steam, 2*s.* 6*d.*, @ 2*s.* 9*d.*; London, by sail, 2*s.* @ 2*s.* 3*d.*, and by steam 2*s.* 9*d.* @ 3*s.*; Bristol, by steam, 3*s.* @ 3*s.* 3*d.* per bbl. Provisions by steam to Liverpool, 32*s.* 6*d.* @ 45*s.* per ton; Cotton by sail 7/32 @ ¼*d.*, and steam at ¼*d.* ℔ lb. Grain, by sail, for Cork and orders, at 6*s.* 6*d.* @ 7*s.*, and to Continental ports, 7*s.* @ 8*s.*; Italian ports, 6*s.* 6*d.* @ 6*s.* 10½*d.* per quarter.

New York Live-Stock Markets.

RECEIPTS.

WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Oct. 22	8,884	81	2,437	27,228	33,443
Oct. 29	10,182	87	1,961	31,831	28,232
Nov. 5	8,195	66	2,323	26,399	33,188
Nov. 12	10,219	115	1,910	27,738	34,192
Total for 4 Weeks	37,480	349	8,631	116,196	129,055
do. *for prev.* 4 *Weeks*	44,141	336	12,114	116,056	107,214
	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	9,370	87	2,157	29,049	32,263
do. do. *last Month*	11,035	96	3,028	29,014	26,803
do. do. *prev's Month*	10,0 1	80	3,206	27,742	20,051

Beeves.—Business at the beginning of the past month opened with a promise of improvement. Light receipts and favorable weather gave hopes to dealers, which, however, were soon dispelled by a reaction and prevailing dullness. Stocks could not be sold, and over a thousand head went over on the first Monday. A bad beginning made a worse ending, and the market continued in a bad way throughout the whole month, ending worse than at any time during the four weeks reported. Bad weather, heavy receipts, and want of purchasers combined to produce an unusual depression. Of course, prices have grown smaller by degrees, and a loss of nearly one cent a pound is noted during the month. At the close, there were many choice cattle for sale from Ohio, Kentucky, and Illinois. These brought 9@10c. ℔ lb for 56@57 lbs. ℔ cwt; a few choice 58lbs. sold for 11¾c. The few Texans and Colorados on hand, sold for an average of 8¼c. ℔ lb., 55 lbs. to the cwt.

The prices for the past four weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Oct. 22	8 @12 c.	8½@11 c.	9⅜c.
Oct. 29	7½@12 c.	8 @11 c.	9¼c.
Nov. 5	7½@12 c.	8 @10⅜c.	9¼c.
Nov. 12	7⅜@11⅜c.	8¼@10½c.	9 c.

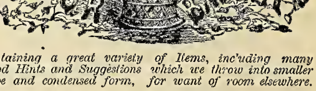
Cows.—A good demand has existed during the month for extra cows, and an advance in price was made. $50@$75 was paid for choice, and ordinary brought $35@$45. Some poor things sold as low as $20. The market closed easier, the demand having fallen off, and the offerings being very poor and unattractive....**Calves.**—A fair demand has been apparent all the month, and this, with a decreasing supply, has stiffened the business. Prices have lagged, nevertheless, and only at the close have dealers marked up figures successfully. Grassers are not in demand, and sell slowly at 2¼@4¼c. ℔ lb., live weight. Good veals have sold readily at 7@9¼c. ℔ lb., live weight....**Sheep and Lambs.**—The sheep market is overdone. Things have been so bad that the difficulty in disposing of skins, not to speak of mutton, has caused a continued dullness. Prices were never lower. At the close, a better feeling prevailed, with smaller receipts; lambs sold at 5⅜@6c. ℔ lb., live weight, and sheep brought 4½@5⅜c. ℔ lb. N. Y. State ewes sold for 4¼c. ℔ lb.. alive....**Swine** have been quiet, without notable change. City dressed closed dull, selling at 6@6⅜c. ℔ lb.; Jersey dressed sold at 7@7¼c. and 7½c. for the best. Live sold for 5¼c. ℔ lb. for 188 lbs.; $5.20 per 100 for 228 lbs., and pigs of 116 lbs. sold for 5⅜c. per lb.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, western, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ℔ ton	$56.50
do. do. Lobos, do. do. do.	47.50
do. do. guaranteed, ℔ ton, cargo C	57.50
do do. rectified, per ton, 10 p. c.	70.50
do. do. do. do. 3.40 p. c.	52.50
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Wheat and Grass Manure, ℔ 1,000 lbs.,	27.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal .....per ton.	42.00
do. do. do. extra fine.... do.	40.00
do. do. do. fine.......... do.	38.00
do. do. do. medium...... do.	36.00
do. do. do. medium do.	37.00
do. Dissolved Bone, 15 per cent........ do.	40.00
Quinnipiac Fertilizer Co's. Phosphate, per ton..	40.00
" " Dry g'd Fish Guano, ton 9 p. c. am'a	42.00
" " Pine Island Guano, per ton.	42.00
Stockbridge Corn Manure, (Boston) per acre...	22.00
" Potato do do do	12.00
" Tobacco do do do	60.00
" Rye do do do	11.00
" Wheat do do do	16.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
German Potash Salts, (25@35 per cent), per ton.	20.00
Gypsum, Nova Scotia, ground, per ton	7.00@8.00
Nitrate of Potash (95 per cent.), per lb.	9½c.
Sulphate of Potash (actual potash 44 per cent) per lb.	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$20.00
Muriate of Potash (actual potash 50 per cent), per lb.	2½c.
Nitrate of Soda, per lb.	4½c.@ 5 c.
Sulphate of Ammonia (25 per cent.), per lb....	5 c.@ 5½c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$50



containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances**, payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss..**Bound Volumes** from Vol. 16 to 35 inclusive, supplied at $2 each, or $2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (30 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 20 years past, sent post paid for 15 cents each.... **Clubs** of Subscribers can be increased at any time at the club rates, if new members begin at same date as original club.

Sending Subscriptions.—No letter Needed.—At the bottom of page 487 will be found a convenient blank form for filling up with names of subscribers. This form can be cut off without materially injuring the paper for preservation, and it will save the necessity of writing a formal letter.

Writing in a Book Sent by Mail.—"J. W. A. C.," Girardean Co., Mo. To write or send any written paper in a book by mail, is forbidden by law, and makes the parcel liable to letter postage.

Six Million Dollars Surplus!—In these days of mismanagement and failure of many Savings Banks and Insurance Companies, it is most gratifying to find institutions that rest on positively solid foundations. Elsewhere in this paper will be found the results of a searching, thorough Official examination of the New York Life Insurance Company. One line tells the whole story. After deducting for all losses and contingencies, and reserving $26,440,111 as an ample fund to meet the insurance requirements of the policies in force, there still remains a surplus of about **$6,000,000.** We congratulate Pres't. Franklin and his associates on this magnificent showing. Our readers interested in Life Assurance, as every one having a family or others dependent on him ought to be, will do well to send to the Company, 346 Broadway, for its circulars and statements.

A Hog Washer.—Cleanliness is an effective agent in preventing disease. It is also often helpful as a remedy for various diseases. It is undeniable that the hog is the most filthy of our domestic animals, simply because it is provided with no facilities for cleanliness. To keep hogs in good health, perfect cleanliness of body and pen should be observed, and the animal most willingly accepts the means for freeing itself from filth. We have frequently been amused to observe the gratification shown by our pigs when they have been treated to a bath from a hose and sprinkler, and the vigorous rubbing they have given themselves afterwards against a rubbing post. This was made a weekly business, and at the same time the pens were well drenched with water. Now a device for washing swine has been invented by a Mr. Maddox, by which these ill-used animals can be kept clean, and their health preserved. The machine is manufactured by Day Bros., of Baltimore, who also, for a small sum, furnish plans and specifications by which the machine can be made by any farmer.

German Agriculturist--A Request.—*The German edition of the American Agriculturist should be in the hands of every German cultivator and laborer on the farm or in the garden.* Published for **20** *years*, and recognized in both hemispheres as authority in agricultural matters, it has absorbed one German publication after another, until to-day it is, with one exception, the only purely German agricultural journal in the United States. Containing all the more important articles, and the illustrations of the American edition, together with a special German department, by Hon. FREDERICK MUENCH, the distinguished cultivator of Missouri, it presents in each issue, invaluable information for every farmer, gardener, and fruit grower. The *German Agriculturist* has all the benefit of the large outlay required in the preparation of the English edition, and it is for this reason that it can be furnished at such cheap rates; otherwise, it could not be supplied at less than three times the present price. Now is the time to subscribe for the coming year. Many of our subscribers take the German edition for their gardeners and workmen, with as much regularity as they furnish them necessary tools and implements. A year's subscription receipt would make a capital Christmas or New Year's present to them. All new German comers, especially, should have the paper, and we ask all our readers to make known its merits to those who are settling among them. By so doing, they will indirectly benefit themselves, for as adjoining lands are improved and made profitable by intelligent farming, their own lands must increase in value. Many Germans subscribe for their friends in the Fatherland. The latter find useful hints and suggestions in the paper which European journals do not supply. Those who may contemplate migrating at any time in the future to America, to engage in soil culture, stock-raising, or fruit-growing, should be furnished with the *German Agriculturist*, inasmuch as it will give them much-needed information in advance, and, to a certain extent, prepare them for their new field of labor. The single and club rates are the same as for the English edition, and may be clubbed with it.

N. B.—The German edition of the *American Agriculturist* is to be greatly improved, beginning with the December number. It is to have a beautiful illustrated, tinted paper cover, and other added attractions, which will make that Journal still more valuable.

Nebraska.—Many letters are daily received inquiring about this State, its soil, climate, and desirability as a farming country. In a journey across the State, a few years ago, we formed a much more favorable opinion of its soil than we had previously possessed. During the past summer, one of our associates spent several weeks there, visiting a majority of the Counties, and was very favorably impressed. From all he could gather, and from other sources of information, we judge that any farmer going there, with sufficient means to maintain himself and family temporarily, until he gets a start—that is, until he can get a first crop harvested—can hardly fail to do well. This year, a large number have made enough from a single harvest to pay all expenses of the crop, and the original cost of the land, with a surplus over. Those desiring information as to localities, prices of land in market, etc., would do well to write to Hon. O. F. Davis, at Omaha; or, A. E. Touzalin, at Lincoln, Nebraska.

Dislocation of the Patella (Stifle).—"G. R. C.," Flatbush, L. I. When the patella or knee-cap has been dislocated by any means, the remedy is to draw the foot forward, by means of a rope tied to the fetlock and passed through a saddle girth, if other means fail, and then press the bone into its place. Then bathe the part in ice-cold water and decoction of oak bark, and keep the horse on a level floor for a week or two.

A Great Favor

It will be, if *all* our subscribers, who have not done so already, will send in their renewals for 1878, and any new names to come with them, immediately, *on receipt of this paper*; FOR THE REASON that it will enable our old experienced Book-keepers and Clerks to get the names carefully and neatly arranged alphabetically, in the different States and Territories, before the Holidays, when there is always a rush of business, requiring night work, the calling in of temporary clerks, etc. This is especially important the present year, as the sending out of the Microscopes will involve four-fold work, since every instrument must be carefully packed, directed, and, when sent by express, a receipt taken for it. *It will take no more time to renew subscriptions Dec. 1st than at a later date.* Clubs can be increased at any time, as noted elsewhere. Those sending for the microscopes first will receive them first.

The Next Volume will certainly be *superior* to any *previous* one. Increased experience and new facilities will secure this. From those who approve our work, we ask as a favor, that they will invite other friends and neighbors to join our company. Will it not be a pleasure to each one of our readers to bring along one, two, three, or more—*at least one*—to begin with us the new year? It will be a favor appreciated by us, while every addition to the number of subscribers gives us increased facilities for doing better for all.

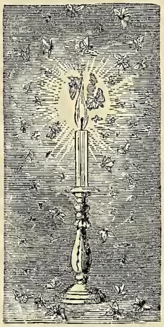
☞ In writing, let all matters for the editors be on a *separate* sheet, containing, also, your name, P. O., County, State, and the date.

To Advertisers—Important Hints.—1st. All who have plants, seeds, implements, indeed anything, to place before farmers, should not forget that January and February, especially January, is their season for rest, for reading, for planning and laying out their work for the year, and deciding upon what they will use in the way of seeds, implements, improved animals, what purchases they will make. This journal is not like a daily or weekly paper—read to-day, and in the waste-basket to-morrow—but it is preserved for reference for months, generally for years.—2d. No advertisement can be admitted, at any price, from any person who is not fully believed to have *both the ability and intention to do just what he promises.*—3d. No patent medicines or secret things are admitted. We have recently returned an unusual amount of money offered for advertising such things, showing that some people have forgotten, or do not understand our rules.—4th. The best advertisement is one setting forth *most clearly* what is for sale, its cost, and how to get it.—5th. The GERMAN edition of the *American Agriculturist* is a valuable and cheap medium for reaching a large claass of most intelligent people; it circulates in every State of the Union, largely in some of them; in Germany, Russia, Austria, Norway, and most other countries.

Clubs can at any time be increased by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 10 subscribers and $13, may afterwards send 10 names more and $9, making 20 subscribers at $1.10 each, and so of other club rates.

India-Rubber or Gum Boots, are at certain times, and in particular places, of so much real comfort and value to farmers and others of our readers, that in February, 1876, we gave an account of their manufacture. This article described and illustrated the processes followed at the "L. Candee & Co." works, at New Haven, Conn., the oldest factory of the kind in the country. Since the article referred to appeared, we have had occasion to test the quality and observe the satisfactory wearing of the "Standard Pure" boots supplied by "Candee & Co." It is, as we know from experience, exceedingly annoying to find an article, upon which has been expended great care and thought in bringing it to perfection, closely imitated, and put before the public, as our own. We are told, and there is but little satisfaction in knowing it—that the highest possible testimony that can be paid to the excellence of an article, is to imitate it. The Candee Co., finding that boots are made of adulterated stock, in exact imitation of their "pure gum boots," have issued a circular cautioning all purchasers that their boots are branded on the leg, in plain letters: "Standard Pure. 'L. Candee & Co.,'" and state that all other makers of "Pure Gum Boots" have adopted a similar brand. They state that all boots not similarly branded, whether dull, or finished with a luster, are made from poor stock, which the purchaser, from inspection only, can not distinguish from the "Pure." Purchasers of rubber boots, should look to the brand upon the leg. At the great Trade Sale of rubber goods, held in Boston in October last, the Candee goods brought higher prices than any others sold.

Sundry Humbusg.



One of the rascalities practicable in cities is that of personating a police officer. Sometimes this is done by a rogue to accomplish some purpose of intimidation or other scheme; but the risk of detection is great, and the punishment heavy. It is much safer to pretend to be a detective, and in view of the number of private detective concerns—some of which are organized rascalities, on the principle of "set a rogue to catch a rogue"—that have nothing to do with the regular police force, and, as the success of detectives depends largely upon being unknown, it sometimes happens that rouges assume to be detectives, and under this disguise manage to fleece timid or unsuspecting persons. This has happened a number of times, but it remained for Cincinnati, O., to have an organized bogus detective force, and, under the pretense of a widely-extended secret service, manage to raise a crop of petty swindles. For some months we have received occasional postal-cards, setting forth the claims and aims of the

"UNITED STATES SECRET SERVICE COMPANY."

This proposed to do a "General Detective Business," and especially to go for "swindling advertisers." The special method in which this company would "realize" was not evident on the face of the card, and all that we could do was to warn our friends, by mail, to let the thing alone, as its very title was a fraud. There is a "U. S. Secret Service Co.," but it does not advertise for business, it being attached to the Treasury--and, perhaps, other departments at Washington. One suspicious thing about this "Secret Service Co." was its method of getting names to which to send cards. Notwithstanding all that has been said, some papers (and, we are sorry to say, some agricultural papers) continue to advertise a remarkable "Lamp-Glass Co." Persons sending to the glass concern, for circular, concerning their wonderful terms to "agents," in a few days after receive one of the "Detective Co.'s" advertisements, directed in the same hand as the glass chimney document. All this looked suspicious, but we could do nothing but wait for developments; and they came at last, as they are very sure to do if one is patient. It appears that the "U. S. Secret Service Co." advertised for members of its force. What is a "Service Co." without servers? Our correspondent, "A. D.," of Marengo, Ill., applied. He was accepted, his salary to be $1,000 to $3,000 a year; but he must first "sign enclosed certificate," which "would be referred to proper officers," etc. "A. D." signed and sent. Soon he received another letter, and then—the cat was out of the bag. The "Secret Service Co." send a circular saying that they publish

"THE AMERICAN CRIMINAL GAZETTE."

Every member of the force is "required to be a regular subscriber," and pay his $3 in advance. Then "A. D." is told: "When you remit, enclose the money in an ordinary envelop; DO NOT SEND by P. O. money order, or in a registered letter. Send in ordinary mail, as you would any letter on business." All that machinery to get a paltry $3; but, then, the letters appear to be done by one of the new copying processes, and may be turned off very rapidly, and, as the offer of $1,000 to $3,000 salary was pretty good bait, the $3 remittances no doubt came in lively. But, after all their caution about mailing, the "Co." has been hauled up to answer to an indictment for sending matter through the mails "calculated to defraud the public." The transaction has quite soured our correspondent, "A. D.," as he wishes us to "advise no one to send any money into

Cincinnati under any circumstances, as there is a regular ring there." We must admit that, for a city of its size, Cincinnati does very well in the Humbug line; but our friend, "A. D.," is quite too general.....One of the periodical humbugs—and one that breaks out at this season, when long evenings come—is the chap with his

"BEAUTIFUL GAS-LIGHT AND SAFETY BURNER."

It is quite old, but none the less dangerous, and must meet with success somewhere, else it would not live from year to year. The chap with the stuff was recently in some of the towns of Massachusetts, and inquiries come concerning it. It is a contrivance for burning the *vapor* of naphtha, benzine, gasoline, or some of the light petroleum products, and there is no gas whatever about it. These articles are dangerous to have about the house, with or without a "safety burner." Our advice is condensed into

DON'T.

In the village near which the writer resides, the "gaslight" chap came along several years ago. One hotel and several stores invested in the "gas" lamps. Some time after, we heard of trouble at the hotel—more gas than was wanted, and much more *smoke.* It was but a few months before these "safety burners" disappeared from the place entirely. They are dangerous at all times, and are a swindle in pretending to be gas, when they only burn vapor.....That remarkable "Mining Co.," in which an investment of

"$1 WILL SECURE A COMPETENCY FOR LIFE,"

finding New York too small—or one near enough like it to be its own brother—has turned up at Calais, Me. It is so probable, you know, that a mine which shells out no end of ore worth $1,348 per ton, should have its headquarters down among the lumber-yards of Maine, and be begging people to take it by the dollar's worth. It may be all well enough, but, then, how it looks!

A DRY SHAVE FOR FIFTY CENTS.

A friend in Pennsylvania saw an advertisement of "Clark's Aromatic Tablets, or Diamond Shaver," "warranted to shave any man, without razor, soap, or water; free by mail for fifty cents," the address being given as in East Ninth street. Instead of sending his fifty cents to the address, and getting his information at first hands, our friends writes to know about the shaver. To send from our office up to East Ninth street, and return, may take two or three hours, according to the ease of finding the parties in that rather "promiscuous" part of the city. We can not always send a person off on an exploring expedition off-hand; so we waited for an opportunity. Probably our Pennsylvania friend's beard is growing in the meantime, and he fears that he may have to take to the old fogy "razor, soap, and water." So, in a few days after, he "again" writes "for information about the shaver." We start a young man at once for East Ninth street, with fifty cents in his pocket for shaver, and ten cents for car fares. He goes, but is long in returning. At last he comes; he has found the place; several flights up, in some tenement house. Clark & Co. evidently propose to do business by mail, and are not prepared to receive customers. Their store was a general living-room; their business people, the women and children of a tenement house family; their warehouse a bureau drawer, out of which came the "Aromatic Tablet and Diamond Shaver." Seizing the prize, and not forgetting to deposit the half dollar, the young man returned, and we were the possessor of something. It was not "aromatic," it was not "diamond,"

BUT IT WAS A "TABLET."

It measures 2 in. long, 1¼ in. wide, and ¼ in. thick. It hath the color of pummice stone, and the texture of scouring brick. Did we try it on our beard? Not much. We had experienced one *shave*—sixty cents' worth—and that would do for one day. So far as a superficial examination goes, the stuff is powdered pummice, stuck slightly together, as a fragment dropped into water falls to powder at once. This reminds us that we once knew a sea captain who kept his beard down by rubbing it with a piece of pummice stone, which he carried in his pocket for the purpose. If any one wishes this Tablet for $2, we will consider the matter. We reckon thus: Cash for Tablet, fifty cents; car fare, ten cents; young man's time, forty cents—$1. As all fancy articles should pay at least one hundred per cent. profit, we name $2, but do not hold ourselves bound. .."The melancholy days are come, the saddest of the year," and though there has rarely been a finer Autumn, we feel sad, and have to "drop into poetry," even if borrowed, to express our sadness. In fact,

THESE AUTUMN DAYS ARE LONESOME-LIKE.

With the flowers, the birds, and the gay foliage have gone—not only Russell & Co., but Hetherington & Co.; at least, they make themselves manifest no longer. In the bright summer days, it was a dull one that did not bring a dozen, and from that up to a market-basketful of their nicely-printed circulars. These had such a jolly lot of names on them that it seemed quite sociable, and when we could see—oh, ever so many times a day—that by just going and paying $15 we could get no end of gold watches and chains, valued at $150—and make $135 over and over again. Then, when we think how we neglected our opportunities, and when we reflect that no more of these offers come from R.'s & Co. or H.'s & Co., well may we say, "The melancholy days have come."....Please do not ask our opinion of these

WALL STREET SCHEMES,

wherein some genius has found out how other people can make a fortune out of a dollar—provided you will only send it to him, or those who print a lot of jargon about "privileges, puts, calls, and straddles," words of which we are sure our inquirers do not know the meaning. We repeat to these the old gambler's advice to the young one: "Never play a game you do not understand." When letters began to come concerning this Wall street gambling, we did the best we could for our readers. We went to men of high standing, who deal in stocks in a legitimate way. We were assured by them that none of those who are trying to extend Wall street practices to the prairies and back woods, have any business standing at the Board; we asked what advice to give concerning these schemes, and received for reply,

"TELL 'EM TO LET 'EM ALONE—LET 'EM ALONE."

We have done all that we can do in these cases, and we can not really find time to repeat by letter what we have on other occasions printed, and here print again, as a general and complete answer to every scheme and proposition of the kind.....Now is the season, or soon will be, of poultry shows. Those who expect to take prizes with Leghorns, Plymouth Rocks, and others, will be nowhere alongside of

KING DAGOBERT'S FOWLS.

It doesn't matter who old Dag. was, except he was a king, and had some gardens. When Abbe Somebody went to build a church on the ruins of Dag.'s chateau and gardens, he found a hen's nest, with a whole settin' of eggs. These eggs, being 2,500, more or less, years' old, were being about to be thrown away, when a "savant" was consulted—those are chaps they have in France, and call them so because they "savey" a thing or two. Savant hit upon a splendid way of finding out if those "eggs was eggs." Did he candle 'em? No. He said "set 'em," and they were sot. In twenty-one days the question was settled. To make it short, the Abbe has kept the Dagobertian fowls pure; and now, wanting to feed the poor of his parish, he don't do it at first hands, and give them chicken pie, but he—. The Abbe is about to organize (they always organize in France) a sale of King Dagobert's eggs. Don't all rush at once, for we may as well record our belief that we don't think that that breed will flourish unless fed upon wheat raised from that found in the mummy boxes.

Bound Copies of this volume, and of every previous volume back to Vol. XVI. (1857), neatly bound, with gilt backs, Index, etc., are supplied at $2 each (or $2.30 if sent by mail.) See Publishers' Notes, page 454.

Subscription Receipts Not Sent.—It is impracticable, next to impossible, to forward receipts for subscription money received. Money forwarded according to directions (page 454), is very rarely lost. The receipt of the paper is evidence of receipt of money. Those specially desiring acknowledgment, can enclose a postal card directed to themselves, and write on the back of it just what they want said. Then, on opening a letter, the postal card will be dated and signed at the office, and put into the mail.

Music at Low Rates.—One of our associates, who is musically inclined, says that White, Smith & Co., Boston, Mass., who have long advertised in our columns, send in their "Folio" choice selections of new music, at a remarkably low price.

No Farewell Words.—Though closing a year, we offer no farewell words, because we expect to meet all the members of our household at the beginning of the New Year. We try to consider every regular reader of this Journal as a member of our family, whose interests are to be jealously guarded and promoted in every possible way, and the multitude of kindly expressions of appreciation of this mutual relation, continually coming to us, are of inestimable value, and the greatest reward of our labors. We hope ever to merit this good will, and in the coming year we shall continue to spare no effort to increase the mutual respect and kindly feeling hitherto existing between the editors and readers of the *American Agriculturist.* Everything that intelligence, industry, earnest effort, and liberal expense can do, will be done to make the next Volume one of unprecedented excellence.

For Half Price or Nothing.—The Microscope elsewhere offered, is certainly equal to any instrument ever before sold under $2.75. We can put it at only $1.50 for the reasons given. It is well worth a place in every household. As offered *with* the *American Agriculturist*, it reduces the cost of each to *half price,* or calling one full price, the other costs next to nothing.

Please Tell Friends and Neighbors of the splendid opportunity now offered to get a good, useful Microscope and the *American Agriculturist* for all of 1878, at but a trifle more than either has hitherto cost. Every family ought to have them, and would do so at once if they knew of their real value.

A "Bakers Dozen" for 10 Days.—To new subscribers for 1878, received prior to December 10, we will send this number without extra charge; this is 13 months for the price of 12.

Over 19,000 People have received valuable Premium Articles from this office *free,* with satisfaction to themselves and to the publishers, and profit to those they induced to subscribe. There ought to be 50,000 people gathering up such premium lists this month, at least one at every post-office. If no one else is pushing the work on, will the reader look after it? The premiums are excellent and worth the small labor required to get them free.

Sport of a Chrysanthemum.—"C W. W.," sends from Lewistown, Pa, a branch of a chrysanthemum, with flowers of two distinct kinds; some are pale rose, and others with yellow and brownish petals. Mr. W. suggests that this may be due to a crossing, through the agency of insects, with the pollen of other flowers, but this could not well happen. It is not rare for plants to sport in this manner; especially in those garden varieties which have been produced by numerous crosses, and the "blood" of which, so to speak, is much mixed, it often happens that a branch will produce flowers unlike the rest of the plant. Several of our choice roses have been produced in this manner, by bud variation, as it is termed, the sporting branch being propagated, its peculiarities are perpetuated.

Tuberous Begonias.—These, at least in some localities, are likely to become popular as bedding plants, and also for the summer decoration of greenhouses. Mr. H. P. Worcester, gardener for Daniel Barker, Esq., of Norfolk, Va., sent us in October last, a box containing flowers and foliage of those raised by him, as we infer, from seed. The flowers presented a great range in color—from white and salmon to the deepest scarlet—and also in size, while the foliage was finer, in colors and markings, than any we have before seen. We are glad to know that others are more successful with these plants than we have been. When the seed was first offered, some five or six years ago, we at some expense procured two packets from one of the prominent seedsmen of Paris. A fair crop of plants was obtained; they were grown one year for their tubers, of which they made fine and large ones; the second year they came into flower, and every one, without exception, though the foliage showed some variety, gave a miserably insignificant white flower, and the whole lot went to "the heap."

Our Exports.—The rapidly increasing export business offers interesting matter for consideration. On looking over a list of exports from one port we find railroad passenger cars shipped to Cuba and Brazil; coal to South America and the West Indies; car wheels to Brazil and Holland; locomotives to Russia and Brazil; machinery of different kinds to England, Holland, and Brazil; nails to Peru, Brazil, and the West Indies; iron pipes to Cuba; Agricultural implements to Germany, France, and South America; paper, leather, petroleum, and soaps to England, Germany, and many other countries, and cotton goods to China, India, and England. For a beginning, this list is of more than ordinary interest and promise.

Value of Lobster Refuse.—"J. A. McL.," P. E. Island. The refuse of a lobster canning factory, when dry, if it could be freed from the shelly portion, is of about equal value with fish scrap. The shells are of much less value than the refuse meat. The whole, when green from the factory, would probably be worth two dollars a ton. The best mode of utilizing it would be to dry and grind it to powder, using about two or three tons per acre, or else to make it into a compost with earth or peat.

Carbonic Acid Gas.—"J. C.," Wis., asks how to neutralize Carbonic Acid in a tight dark room. The natural reply would be to ventilate—but then the room would cease to be tight. It is very difficult to answer questions in which the conditions are only partially stated. Had J. C. said what the room was used for, we could have replied understandingly--fresh slaked lime will take up carbonic acid, so will water, and so will several other things.

The Best Holiday Present.—Send to a relative notice that you have paid for him a year's subscription to this journal, and every time a number arrives that friend will have a new reminder of your kindness. The hints and suggestions its pages will afford will be turned to profitable account, and supply additional cause of gratitude.

Italian Onions.—It is astonishing to what size and excellence onions attain in warm climates, with suitable soil. The onions imported from Bermuda give some idea of this, but those raised on our Mexican frontier, as at El Paso, are vastly superior to the Bermuda onions, and we did not suppose these could be equaled, until we recently received some from Wm. H. Carson, seedsman, No. 125 Chambers street, N. Y., which he had just obtained from Italy. There were five kinds, from moderate—indeed, one quite small size—up to those equal in size and quality to any we have met with. The two larger onions, a red, weighing 26 oz., and a white, 28 oz. weight, each measured 17 inches in circumference. Mr. Carson expects to receive seed of these varieties, which, whatever it may do in the Northern States, will, in some of the Southern States and on the Pacific Coast, no doubt succeed well. In Southern Europe these large onions are produced by sowing seed in Autumn, wintering the partly-grown bulbs in the ground, and in the Spring they start early, and grow to a great size.

Vick's Illustrated Monthly Magazine.—Mr. James Vick, seedsman, of Rochester, N. Y., has for some years published his catalogue in the form of a quarterly, in which he gave many interesting horticultural items. He starts out for the coming year with a monthly, with the above title, and sends specimen numbers nearly three months in advance of the regular issue. Mr. Vick, having had much experience as an editor, does not enter journalism as a novice, and his magazine will no doubt be interesting and useful. If any one man can carry on an immense seed business, run a seed farm, look after a florist's establishment, and then, when he wishes a little recreation, can edit a Monthly Magazine, it is Mr. James Vick, to whom added years only seem to bring increased energy. We have only space to say that, in contents and mechanical execution, this specimen number is quite equal to his former publications, and that is saying a good deal. As his Monthly is only $1.25 a year, its success would seem to be assured.

Our Linseed Oil Manufacture.—The extent to which the manufacture of linseed oil is now carried on in the West, may be shown by the fact that there are three mills in Chicago, each turning out about 10,000 barrels of oil and 4.000 tons of oil cake yearly, using to produce these 250,000 bushels of flaxseed, all the growth of near by localities. St. Louis competes very closely with Chicago, if it does not surpass these figures. While we congratulate ourselves on this fact, we have to regret that the 12,000 tons of oil cake are worse than lost to us, because we sell them to our competitors in Europe, who feed this nutritious substance to cattle, making meat and manure with which their large crops are grown. This is a serious loss to us who should use every pound of our product and sell the meat and grain grown by it.

Catalogues.—Comparatively few of the Catalogues for the spring of 1878 have come to hand, and in view of the crowded state of our columns at the close of the year, we defer a notice of those received until we can make a fuller and better showing.

The Cabbage Family, its varieties, qualities, and culture, by David Landreth & Sons, Philadelphia, Pa. A companion to the pamphlets on Root Crops, etc., issued by the same firm. Price 25 cents.

Diking a Salt Meadow.—"W. H.," Long Island, N. Y. It is easy to dike a salt meadow by throwing up a bank to exclude the tide, and taking the material for the bank from a ditch inside of it. Muck will make a good material for the bank, but it is so easily burrowed by musk rats that the bank will not be permanent unless it is protected. If a fence of hemlock plank be built in the center of the dike, that will prevent the rats from burrowing through it. When the water has drained from the muck it will become solid, and the surface of the marsh will sink a foot or two perhaps as the water is drained off. An automatic sluice, as shown in the *American Agriculturist*, July, 1877, may be used, by which the drainage water will flow off at low tide, and tidal water be excluded. The cost of digging a ditch and throwing up a bank would be about 12½ cents a cubic yard, or 27 cubic feet (that is 3 feet long wide and deep),

To Boys and Girls.—We congratulate you on the arrangement made to supply a microscope to every family—one that will not be a mere useless, imperfect toy, but a really good one. Full instructions for its use will go with the instrument, and the Editors will take some pains to give you interesting information from time to time in your own columns. We expect you will have little *Microscope Clubs*, the members of which will each prepare specimens that all can study and enjoy. It will be a capital amusement, full of instruction. See that you have as many microscopes as possible in your own neighborhood. When one of you cannot do it alone, it would be well for two, three, four or more of you to unite your efforts, and raise a premium club of subscribers, and perhaps own the premium in common, or join hands and get subscribers enough to procure the Great Dictionary for your school-room; or if possible a sewing machine for some worthy poor woman; or some article or articles of silver ware for your pastor, or a favorite teacher. Almost any one can alone get a *multum in parvo* knife or other small premium. The premium list goes on just the same as before. The microscopes do not interfere with them, but are an additional help in procuring subscribers. The microscope would be cheap at $2.50, yet for a good deal less money any one can have both the microscope and the *American Agriculturist* all through 1878, as explained elsewhere.

Value of Shavings and Trimmings of Hides.—"S. B.," Kings Co., Nova Scotia. We have paid as high as $5 a two-horse wagon load for the trimmings of green hides from a tannery. These contain a large proportion of water; but if dry would be worth $1 per 100 pounds as compared with superphosphate at $2.50. The hide scraps, however, contain no phosphoric acid, being nearly all nitrogenous matter and very rich in ammonia. They should not be treated directly with sulphuric acid as bones are, but composted with earth and moistened with very dilute sulphuric acid, or dried and reduced to powder and used as guano is.

A Fair Hit at the present attention given to "athletic exercises" is the following floating item: A Michigan farmer writes to the Faculty of a leading Eastern College: "What are your terms for a year? And does it cost extra if my son wants to learn to read and write, as well as to row a boat?"

Hay Caps.—Cutting Harrow.—"M. C. S.," Montgomery, Ala. We know of no one who makes hay caps for sale. They are so easily made that it is less trouble to make them than to send out to buy them. Shares' coulter harrow, and the Nishwitz harrow act by cutting or slicing the sod, and do not tear it up; the Bradley reversible harrow acts as a smoothing harrow, which does not tear up the sod when drawn one way, and as a clearing harrow when reversed. This last is a most useful implement. All these harrows can be procured of R. H. Allen & Co., 189 Water St., New York

Crackers for Horses.—The Russian cavalry are provided with a prepared food made of pounded oats, gray-pea flour, hemp-seed oil, and salt; this is made into a paste, and cut into thick cakes about 4 inches across, perforated with holes to facilitate soaking in water, and baked. It is transported strung on wires in rations of 4 lbs. each, to be fed dry or soaked.

The Arnold Arboretum.—A tract of land at Jamaica Plain, Mass., of about 130 acres is assigned by Harvard University to the Arnold Arboretum, of which Prof. Chas. S. Sargent is the able director. It being desirable to have the land laid out to the best possible advantage, and the income from Mr. Arnold's bequest not being equal to any extraordinary expenditure, Mr. Fred. Law Olmstead, so favorably known as a landscape architect, volunteered his services for the work, and a few of the wealthy gentlemen of Boston and vicinity, have volunteered the few thousands needed to pay the surveyors and draughtsmen. Thus this important preliminary work will be accomplished without drawing upon the proper income of the fund, and in a manner so thorough that it can not fail to be of the greatest value to the Arboretum—an Institution, to the development of which arboriculturists and lovers of trees, not only in America, but abroad, look with the liveliest interest.

Blasting Logs.—"R. G.," Humboldt Bay, Cal., writes: "In your July No. you advise 'H. C. G.,' to use dynamite in blasting logs. Here in California, where it is a common practice to blast logs from 8 to 12 feet diameter, we use nothing but blasting powder. Take a 1¼ or 1½-inch auger, bore a hole in the side and middle of the log, not in the end, towards, and a little below the center, in the direction the log will split easiest, put in the powder and fuse, put a rag or something dry on the top of it, and tamp with whatever is at hand and will pack. If well done, the log will seldom fail to split in halves. For blasting logs to fragments, use a larger auger, more powder, and do not bore below the center, but I believe dynamite would be best for that."

Basket Items continued on page 481.

Horseshoe Nails by Machinery.

Long after cut-nails were, in this country, made by machinery, wrought nails were still turned out by the slow process of heading each one singly, and when the still more difficult problem of a horseshoe nail was presented, it being so unlike in head and point to all other nails, it was the boast of the blacksmith that no machine would ever be invented that could turn out and point a horseshoe nail. In machinery, however difficult the task, some inventor has been found able to overcome it; and at the present day, the wide-awake blacksmith, instead of defying invention to make a horse-nail, is glad to make use of the nails that the inventor's machine turns out ready to his hand, and thus quietly acknowledges that these nails are better than those he could slowly fashion one by one from a piece of nail-rod. The Globe Nail Company, of Boston, Mass., have been engaged since 1868 in manufacturing horseshoe and other nails, and in perfecting the machinery for the purpose; beginning on a small scale, they gradually enlarged, until, at the present time, they have have an immense establishment, capable of turning out eight tons of finished nails daily. Their horseshoe nails are made from the best Norway iron, cold-rolled, and are remarkable for uniformity of size and perfect finish. The appearance of the nails is shown in fig. 1. Every one who has had anything

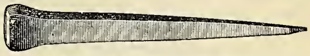


Fig. 1.—MACHINE-MADE NAIL.

Fig. 2.—MAKING HORSE-NAILS BY HAND.

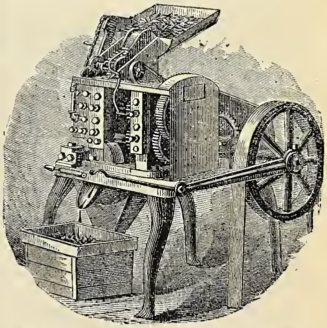


Fig. 3.—MACHINE FOR MAKING HORSE-NAILS.

to do with horse-shoeing, knows how much depends upon the point of the nails, and that if carelessly pointed by hand, the most skillful shoer cannot drive them properly. Being pointed by machinery, they are all alike, and their excellence not only as to point, but general finish, is attested by numerous skilled farriers; and they receive the most emphatic commendation from the Quartermaster's Department and the Veterinary Surgeons attached to the army. Probably the severest possible test to which these nails could be subjected, is on the feet of the horses and mules employed in the frontier service, and the testimony here is of much greater value than that expressed in the awards at the various fairs, including the Centennial, where they have been exhibited. Few who have not made, or watched the making of, a horseshoe nail by hand, or at least had to point the nails for use after they were *finished*, can appreciate what a great mechanical triumph it is, to turn out a nail all ready for use, by simply feeding the plate to a machine, which punches out the blanks, and then pass the rough nails to a hopper, whence they drop into a machine which finishes them. This great step is strikingly shown in the engravings figs. 2 and 3. In one is shown the slow hand process, where 6 lbs. of finished nails was a good day's work; in contrast with this is seen the machine which turns out 600 lbs. of finished nails daily. But some one may say "you exalt the machine above the man"; not at all. This very man will stop making nails, it is true, but he will either be promoted to making machines, or to running several of them to supply the large demand for these nails in other countries.

Science Applied to Farming.—XXXVI.

More About German Potash Salts—Leopoldshall Kainit—Ashes and Potash Salts—Practical Conclusions.

One class of the numerous questions I receive about potash salts can be be best answered by giving the composition and cost of a number which have been used in this region, analyzed at our laboratory and are fair representatives of some of the more important grades in our markets.*

POTASH SALTS.	INGREDIENTS IN 100 LBS. Potash.	Sulphuric Acid.	Chlorine.	Equivalent Sulphate of Potash.	Equivalent Chloride of Potassium	Retail Price per Ton.	Cost of Actual Potash per pound
HIGH GRADE SALTS.	lbs.	lbs.	lbs.	lbs.	lbs.	$ c.	cts.
I—Sulphate, (80 per ct.)	43.97	44.45	—	81.31	—	65.00	7.4
II—Sulphate, (75 per ct.)	40.66	45.25	—	75.19	—	65.00	8.0
III—Sulphate, 60 per ct.)	31.97	47.82	0.90	59.12	—	60.00	9.4
IV—Chloride, (Muriate, 87 per cent	54.89	—	—	—	86.90	50.00	4.6
V—Chloride, (Muriate, 80 per cent)	50.64	—	—	—	80.08	50.00	5.0
LOW GRADE SALTS.							
VI—Prepared Kainit....	16.29	16.04	—	30.12	—	25.00	7.6
VII—Prepared Kainit....	14.41	17.59	31.09	26.65	—	25.00	8.6
VIII—Leopoldshall Kainit	13.97	19.39	—	25.83	—	30.00	10.7
IX—Leopoldshall Kainit	12.18	—	—	22.56	—	30.00	12.3
X—Leopoldshall Kainit	12.30	20.07	—	22.72	—	18.00	7.3
XI—Leopoldshall Kainit	11.47	19.38	29.55	21.23	—		—

The high-grade articles were from H. J. Baker & Bro. and The Mapes Formula and Peruvian Guano Co., both of New York City, and from W. H. Bowker & Co., of Boston.

A few words of explanation will help to a better understanding of the table: It is customary to reckon the potassium of these salts as potash or "actual potash." In the sulphates this term expresses the amount of potassium oxide, potassa or potash present. In the muriates it represents the amount of potash which the potassium would make if combined with oxygen instead of chlorine—100 lbs. of pure sulphate of potash contains about 54 lbs. of "actual potash." 100 lbs. of sulphate of potash are therefore said to be equivalent to 54 lbs. of actual potash, and *vice versa*, 54 lbs. of potash in the sulphates are reckoned as equivalent to 100 lbs. of sulphate of potash. In the "muriates," 100 lbs. of chloride of potassium are reckoned equivalent to about 63 lbs. of potash, and *vice versa*. Accordingly, a sulphate with 80 per cent sulphate of potash contains (80x54) 43.2 per cent of actual potash. No. I in table, with 44 per cent actual potash, contains about 81 per cent of sulphate of potash. The 80 per cent of chloride of potassium in No. V corresponds to 50 per cent actual potash, and so on. It is customary to reckon the cost of the actual potash in these articles by dividing the cost per ton by the number of pounds of potash in a ton. Thus, No. V, with 50 per cent, or 50 lbs. in 100 lbs., furnishes 1,000 lbs. in a ton. The 1,000 lbs. then cost $50, and 1 lb. costs 5 cents. So far as my observation of the

Quality and Cost of the Potash Salts in Our Markets

goes, the high grade muriates are uniformly reliable, and are the cheapest sort of potash for fertilizers. That with 50 per cent actual potash is quoted in the "Price List of Fertilizers" in late numbers of the *American Agriculturist* at $50 per ton, and has brought that price quite generally. I have known it to be sold much lower, however. Farmers' clubs and individual farmers in Connecticut have been buying it at $40 per ton cash, free on board, in New York. This would bring actual potash at 4 cts. per lb. There is, by the way, a new brand of chloride, "Douglashall, No. 2 Fertilizer," imported by H. Seligman & Co., of New York, which, besides 80 to 82 per cent chloride of potassium, contains also 10 to 12 per cent of sulphate of magnesia, and is on that account somewhat preferable to the ordinary muriates. The sulphates are manufactured from the muriates by adding sulphuric acid and heating. The difficulty and expense of this process accounts for their higher cost, and the fact that they are sometimes hardly as good as claimed.

Leopoldshall Kainit.

The need of information about fertilizers, and the fact that farmers will be cheated until they have learned, are strikingly illustrated in the sale of the low grade potash salts, and particularly the Kainit. Tens of thousands of tons of this material are annually imported and sold to farmers all the way from Maine to Louisiana, under the name of "Genuine Unmanufactured Leopoldshall Kainit." The average composition of the kainit as sold from the Leopoldshall mines is stated on German authority at 25 per cent sulphate of potash (corresponding to 13.5 per cent actual potash), 14 per cent sulphate of magnesia, 14 per cent chloride magnesium, 33 per cent chloride of sodium (common salt), and 13 per cent water.—The samples of Leopoldshall kainit that have come under my observation have averaged about 12½ per cent of potash, corresponding to 23 per cent of sulphate of potash. The 12½ per cent of actual potash will make 250 lbs. in a ton of 2,000 lbs. Potash can be had in chloride of potassium, as we have seen, at from 4 to 5 cents a pound. It is certainly worth no more than 5 cents per lb. in the kainit. At that rate the 250 lbs. of potash in the ton will come to $12.50. Whatever the kainit costs above this must be reckoned as either increasing the price of the potash or applied to the other materials. Now a manuring with the kainit is more a manuring with common salt than with potash. The salt and other compounds are useful in diffusing the potash through the soil, so that the roots of the plant may get at it, and in acting upon other plant-food in the soil so as to render it available. In some cases they might be worth more than they cost in the kainit; in others they would be of little value, or positively injurious. For meadow land, where the potash salts must be used as a top-dressing, their action is decidedly advantageous. For grain crops it might be quite benficial. For potatoes, sugar-beets, or tobacco, it would very likely be harmful. At $10.00 to $12.50 per ton, the kainit would be as cheap as the high grade chloride at $40.00 to $50.00, provided the sodium and magnesium compounds are worth enough to pay for the extra freight and handling. But as long as the chlorides can be had at these rates, I seriously doubt whether it would be generally advisable to pay more than $15.00 per ton for Leopoldshall kainit.

According to statements from German manufacturers and American importers and dealers, Leopoldshall kainit costs a little less then $5 per ton at the mines. Freights across the Atlantic are low, so that it can be landed on this side for not over $8.00 per ton, gold. Cartage, storage, and incidental expenses bring this cost up so that, for retail trade the profit begins, as I am told, at $10.50 to $11.00 per ton of 2.000 lbs. Some New York dealers sell small lots at $15.00 per ton of 2,000 lbs. Others charge from $18.00 to $28.00. It has been sold in New England for $30.00 and even $40.00 per ton. In the words of one of the few dealers who refuse to handle these low grade wares, "such prices are abominable."

For the evil, a serious one, of importing and using so much of the low grade potash salts, both sellers and users are responsible. Importers and dealers naturally handle and encourage the sale of the wares on which the margins of the profit are the largest, and being able to get the heaviest percentages on these poor goods, and to dispose of more of them than they could of the better grades, they buy, advertise, recommend, and sell them. A great many farmers say, "Potash salts are potash salts," and take those that can be had at the lowest price, regardless of quality. As long as they will buy low grade potash salts and other fertilizers because they are "cheap," they must expect to get poor wares at dear rates, and have poor success in using them.

Will Potash Salts Take the Place of Ashes as Fertilizers?

Is a question which, judging from the frequent inquiries from all directions, interests a great many farmers. Generally speaking, I think the answer will be, no, and for simple reasons, as explained in previous articles. Ashes contain all the essential ingredients of plant food but nitrogen; by their chemical action, they render the inert nitrogen and other food ingredients in the soil available; they improve the mechanical condition of the soil, and hence, like manure, are reliable and useful everywhere. Potash salts, on the other hand, are not complete, "but partial," fertilizers. They contain little lime and magnesia, and no phospheric acid. The chlorides contain little of value but potash; the sulphates only potash and sulphuric acid, as is illustrated below.

FERTILIZER.		ESSENTIAL INGREDIENTS OF PLANT-FOOD IN 100 POUNDS. Potash.	Lime.	Magnesia.	Phosphoric Acid.	Sulphuric Acid.
		lbs.	lbs.	lbs.	lbs.	lbs.
Wood Ashes,	Unleached.	7–10	32	5	2	1½
	Leached	1–2	25	3½	1½	0½
German Potash Salts,	Sulphate "80 per cent."	44	—	—	—	45
	Chloride "80 per cent."	50	—	—	—	—
	Leopoldshall Kainit.........	12½	—	10	—	33

The chief fertilizing ingredient of ashes is lime. Leached ashes with only 1 to 2 per cent of potash often prove as efficient as the unleached with 7 to 10 per cent of potash. It is easy to see, therefore, that potash salts can be expected to take the place of ashes only where potash is the chief if not the only deficient ingredient, and the mechanical action of the ashes is not needed. By mixing lime and bone or other phosphates with potash salts, or if chlorides be used, substituting plaster (sulphate of lime) for lime, mixtures could be made of similar composition to ashes.

General Conclusions.

The following are the more important practical conclusions to be drawn from what has been said concerning the use of the German potash salts as fertilizers:

1. Potassium, the basis of potash compounds, is indispensable to the growth of all our cultivated plants. It has at least one specific office in the nutrition of the plant, that of aiding in the formation of carbo-hydrates (starch). Without a plentiful supply of potash, in available forms, full crops are impossible.

2. The German potash salts afford, at present, the cheapest and most available supply of potash for fertilizers. They supply also more or less of magnesia and sulphuric acid, which are essential ingredients of plant-food, and sometimes deficient in our soils, and of sodium

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* See, for fuller accounts of potash salts, a lecture on "Potash in Agriculture," and, for analyses, the "Report of Conn. Agr. Exp't. Station" for 1876, printed in Report of Conn. Board of Agriculture for same year.

and chlorine compounds, which latter, though generally beneficial, may in certain cases be harmful.

3. The higher grades will be, in general, most profitable for use in this country, because they furnish the most potassium with the least admixture of inferior materials, on which costs of freight and handling must be paid. The chlorides (muriates) with 80 to 84 per cent of chloride of potassium, corresponding to 50 to 52 per cent actual potash, and the sulphates, with 70 to 80 per cent of sulphate of potash, or from 38 to 44 per cent actual potash, are to be especially recommended.

4. For potatoes, sugar-beets, or tobacco, the sulphates are preferable; for other crops, or on wet lands, the chlorides, which are cheaper, are equally good.

5. Potash salts have proven especially useful for fodder crops, as grass and rye; for leguminous crops, as clover, beans, peas, and vetches, and for corn, potatoes, roots, tobacco, and fruits.

6. Potash is most apt to be lacking in light, sandy, and calcareous (lime) soils, in those consisting largely of vegetable matters, like peat, muck beds, and moors, and in those where guanos, phosphates, bone, etc., which supply nitrogen, phosphoric acid, and lime, but little or no potash, do not bring as large returns as formerly.

7. In order to secure uniform diffusion through the soil, the potash salts should be applied as long as possible before the crop is sown. It is well to mix with earth, or to compost, before applying, especially if used shortly before sowing the seed, otherwise they may injure the crops. And. in general, potash salts are well adapted for composting with muck, earth, stable manure, phosphates, fish, and the like.

8. The best results are generally obtained by using potash salts not alone, but with other fertilizers, as superphosphates, guanos, and fish. Mixtures of these with potash salt form "complete fertilizers." The proper use of potash salts is as adjuncts to other fertilizers.

9. From 200 lbs., to 400 or 500 lbs. per acre of the higher, and 300 to 600 lbs. of the lower grades, are appropriate quantities.

10. The question of the need of potash in a given soil, can be best decided by actual trial. It will be generally advisable to test the question by experiments on a small scale, before making large purchases.

W. O. Atwater.

Wesleyan University, Middletown, Conn.

Ogden Farm Papers.—No. 94.

BY GEORGE E. WARING, JR.

I will now take up the Live-Stock account of the farm, and show, somewhat in detail, what our transactions have been. During the whole ten years of our enterprise—from September 6, 1867, to September 6, 1877—the total footing of this account are:

All disbursements, including purchase of animals, medicines, incidental expenses, etc.		$20,551 05
Receipts, including eggs, poultry, beef cattle, etc.	$32,531 80	
Live stock on hand Sept. 6, 1877	13,339 00—	45,870 80
Amount to credit of this account		$25,319 75

Several of the items are worth examining:

1. *Poultry*—In this we have made a pretty uniform failure, owing to the heavy (damp) condition of the soil. We have repeatedly tried to get some breed of fowls or other poultry that would thrive with us, but have come to the conclusion that, while our neighbors, whose land is dry, can make money in the poultry business, we cannot do so. The account stands thus:

Purchases of stock	$499 54
Sale of eggs, dressed poultry, etc	1,061 54
Amount to credit of this account	$562 00

This is not enough to pay for food bought, to say nothing of building a poultry house. The failure is due to our trying to keep poultry on land entirely unsuited to it—to bad judgment, in fact.

2. *Horses and Mules:*

Purchases have amounted to		$2,569 29
Total sales	$1,731 50	
Stock on hand, September 6, 1877	550 00—	2,281 50
Amount to debit of this account		$288 79

This makes a cost of $28.80 per annum for the cost of teams, aside from the cost of keep. It is, on the whole, less than we might reasonably have expected, but it is quite different from what we did expect. Indeed, it is not a fair showing, because the credit shows the whole amount received for a number of colts sold, and the debit does not include the cost of raising these. We raised in all some 8 or 10 colts, every one of which cost more than he came to, and most of them a good deal more. Indeed, our experience indicates that in a region where feed costs so much as it does here, the raising of colts is a losing business. I think it is demonstrable that every colt well raised hereabout to the age of four years and well trained, costs more than $200. It is only now and then that it can be sold at the age of four years for over $200, and the average price will often be less. The raising of fancy horses may pay, but it requires a large investment in animals of a class which may well be called "extra hazardous." It is not a good branch of industry for an average farmer to engage in.

3. *Swine*—In this item our experience has been more satisfactory, but still the result has not been very brilliant. The item of feed has not been very serious (for a guess—we have not kept it seperate from our general feed account), because we have had an enormous amount of skimmed milk at all seasons, and could have made no other use of so much of it as has gone into the swill barrel.

The total disbursements for pigs, etc., have been		$963 26
The total receipts from sales of pigs, pork, breeding animals, etc., have been	$1,928 36	
Stock on hand Sept. 6, 1877	134 00—	2,062 36
Amount to credit of this account		$1,099 10

We made the radical mistake at the outset of selecting the "small white" breed, which was not suited to our circumstances, and for the progeny of which we did not find a ready sale. For our first sow of this breed (imported), we paid $188, and we never got our money back from the sale of her progeny. Then we tried the "Chester White," with no better result. Then we settled on the "Essex," which turned out very much better. Indeed, for the two or three years while pork was high, and while this breed was in favor, we did very well indeed—selling eight-weeks' pigs readily at $25 each. I still have a good opinion of this breed, especially for crossing on coarse white sows; but for profitable, *thorough* breeding, I think they are too late in coming to profit, and that they are not entirely free from the charge of "shy breeding." I question whether they will ever regain the high popularity they enjoyed six or seven years ago. For raising grade pigs, they are as good as can be asked, but what is especially needed is a breed that, *as thoroughbreds*, are up to all the desired conditions. I question whether it will pay in the long run to raise an improved breed of any race whose *chief* value is in its ability to produce a good race of *grades*. If I were going into the breeding of pure swine again, I should try to find some race which would be in demand among average farmers, rather for its own good qualities, than for the good qualities of its *grade* progeny.

4. *Beef Cattle*—This has been with us a very incidental item. We have worked oxen to a greater or less extent, and have tried to buy such oxen as would improve in value in our hands. We should have had a very fine record under this head, had we not lost our own head at a time when beef was very high, and when store cattle could be bought for a moderate price. Our barn was full, and it seemed so clear that we could add very much to our product of manure, and somewhat to our annual return of money, that we spent over $1,500 in building a long addition to the barn to house some forty head of beef cattle. We bought our stock cheaply enough, and we bought abundant feed for them. After keeping them eight months, on a falling market, we sold them for a round loss, and our shed has never been of any especial use from that day to this, except to shelter the barn-yard from the cold N. W. winds. Thus our speculation cost us more money than any other losing one on which we ever ventured. But for this speculation, this item would have made a respectable appearance—for a small one. The actual figures are these:

Total disbursements	$2,398 59
Total receipts	2,454 93
Amount to credit of this account	$56 34

6. *Thoroughbred Jerseys*—This branch of our business we submit to public inspection with no little satisfaction. We took it up in the very first year of our enterprise, and have followed it persistently to the end, and are now going on with it as vigorously as ever. On full investigation of the ground, we decided that the Jersey was the coming *farmers' cow*, and that, when this fact should come to be generally recognized, she would be sure to come to the front. Up to that time (1867 to 1868), she was generally considered as hardly more than a fancy animal, or a "gentleman's cow."

Our theory was that the Jersey must, before many years, demonstrate her economical value so clearly that the *fancy* demand would become insignificant as compared with the *utilitarian* demand. The event has already shown that this theory was well founded, and there is reason to believe that ten years more will show that we had greatly underestimated the extent of the change. That we were practically correct so far as our own interests were concerned, is shown by these figures:

Total disbursements for the purchase of thoroughbred Jerseys		$10,326 70
Total receipts from sales of thoroughbred Jerseys	$24,259 75	
Value of stock on hand Sept. 6, 1877	12,635 00—	$36,894 75
Amount to credit of this account		$26,568 05

It may be of interest to give the accounts for each year by itself:

	Purchases.	Sales.
Year ending Sept. 6, 1868	$3,475 00	——
" " " 1869	525 00	$300 00
" " " 1870	1.456 00	1,350 00
" " " 1871	900 00	1.885 00
" " " 1872	645 00	3.670 00
" " " 1873	200 00	2,100 00
" " " 1874	1,228 20	2.950 00
" " " 1875	1,322 50	5.988 75
" " " 1876	425 00	2.830 50
" " " 1877	150 00	3.185 50

The estimate of stock on hand is made at fair selling rates, much of it is growing in value, and, as a whole, it could all be cleared out within a year at considerably more than the estimate.

In considering this result, we should not lose sight of the rather undue amount of misfortune that we have had. We lost by death two cows, for which we paid $700 cash, and calves of the value of at least $1.000. Then we have had some still-births at full period, and no less than fifteen abortions, costing us the value of the calf, and a great reduction in the value of the dam. Indeed, it is well within bounds to say that the epidemic abortion from which we suffered in 1871-2 and 3, cost us $5.000. In one case an aborting cow failed to get with calf again and was slaughtered. We had refused $600 for her. In other cases we have, for the same defects, sold cows at very low rates to go to distant points where they have resumed breeding and have done well. "Big Duchess" cost us $400, and "Theresa" cost us $300. We sold the latter for $100, and the former for $50, to go to Illinois, where they both turned out well.

On the whole our losses have been considerably more than I should expect to sustain in another period of ten years, partly because we have learned some things which we did not know at the outset. For example: I do not fear ever again to lose a cow by milk fever. *Judicious* starvation just before and just after calving seems a sure prevention of that.

Collating the accounts as well as I can, I get the following result—which is practicably correct, although the buying and selling of occasional lots for a round sum makes it impossible to be quite exact. We have bought:

23 males for an average of	$47 50
46 females " "	190 25

We have sold:

60 males " "	98 75
83 females " "	216 50

During the last year we bought nothing. The sales were:

3 males for an average of	$170 00
12 females " "	241 25

These averages cover a very wide range of prices. We sold a cow for $750, and a bull calf for $20.

The grand result of our Jersey business has been entirely satisfactory, and, aside from the business aspect of the case, it is pleasant to see that the breed is now very generally recognized as a *sine qua non*, not only of the *best* butter-making, but for the *most* butter-making. It is conceded that no other animal, except a goat, will get so much butter out of a ton of hay as a good Jersey cow, and that no other cow will give the butter such good quality. Ten years ago the Jersey was high-priced because gentlemen wanted her for their lawns. To-day she is still higher priced, because she is recognized as the founder of the coming race of butterman's cow.

Ten years ago, high prices depended on deer-like look. To-day it depends on such excellence of butter quality, as will lead to the greatest improvement of the race for practical purposes. Plenty of "solid color" Jerseys can be bought at moderate figures, if they are poor milkers, but the ideal *butter* cow of this breed now commands higher figures than were ever known before. The highest price yet quoted is $2,500, paid by Mr. Charles Sharpless for "Young Pansy," a supurb fawn and white cow, which I selected as a yearling in the Island of Jersey in the autumn of 1872, (with an eye solely to her dairy promise) for Mr. J. Carter Brown. The Shorthorn would never have reached any thing like its present high scale of prices on any fancy basis. What gives the great value in the Shorthorn, the Jersey, or any other breeding stock, is that little super-excellence, of a *practical* character, which promises a lasting improvement in all posterity.

Ten years ago at the great fairs, the Jerseys occupied a few retired pens, where they were snubbed as starvelings by the beef-cattle judges, and stared at as "Alderneys" by a careless crowd. At the Centennial Exhibition, last year; and at the great St. Louis fair this year, they outnumbered *all other breeds combined;* they had judges who were experts in the breed; and they came fairly to the front in public interest. The change has been very great, and many causes have combined to bring it about, all of them working solely by the education of the public as to the real practical merit of the breed. We are glad to feel that "Ogden Farm" has rendered its help to the work, and to hope that it will be no less useful in this way in years to come.

A Country Cottage, Costing $550.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans are for a low-priced house, similar in character to those in the last *American Agriculturist*, but differing entirely in outlines and arrangement, and embracing a much larger area of floor space. ....**Elevation,** (fig. 1.)—The Front is broken with angles, furnishing a greater number of vertical lines, thus giving relief from the depressing appearance that would otherwise be manifest. The roof projections are proportionate, with simple finish. The Cornices of the central or main part are the most prominent, and have plain trusses. The gable openings supplying ventilation between the ceilings and roof....**Ground Plan,** (fig. 2.)—The interior contains five quite ample rooms, conveniently arranged, and accommodating a good sized family, besides a lobby, pantry, and 2 closets. Hight of ceilings in two principal rooms 9½ feet; in the side extensions 6 feet at the plate, following the rafters to the center of the rooms, and from thence are leveled across at the hight of 9 feet The front entrance is through a lobby. (If desired to economize further, the front stoop and one door may be saved, by putting an arch in place of the front door, making a recessed porch of the lobby.) The Parlor has two front windows, and a closet, and adjoins the kitchen, and two bed-rooms. The Kitchen is large, has two windows, an open fire-place, and adjoins a commodious pantry, and a bed-room. The Pantry has a large window, and is shelved on one side and end. A convenient Clothes-press opens from the right hand bed-room. The chimney is near the center of the house, insuring much saving of heat. The interior of this house may be comfortably warmed from a single fire, by placing a radiator in the parlor, and leading the fire draught from the kitchen stove through it. Such a radiator was referred to in the *American Agriculturist* for May, 1877. In response to several inquiries since received, a description is here given, which will enable any skillful sheet-iron worker to make one, (see figs. 3 and 4): *A*, is the parlor side of the chimney breast; *B*, the kitchen side; *C*, chimney flue; *D*, kitchen fire-place, containing kitchen stove; *E*, smoke-pipe leading from the stove, through the throat-piece, into the chimney flue; *F*, *F*, stove-pipe branches passing through the back of the fire-place, and connecting the smoke-pipe, *E*, with the radiator; *G*, interior section of radiator, (figs. 3 and 4); *H*, face of radiator; *I*, partition within radiator; a damper, *J*, in the smoke-pipe *E*, between the branches, *F*, *F*, regulates the draught, and forces it through the radiator as required. The radiator may be made of any size desired to fit the mantle opening, and if neatly constructed of Russia iron, will be quite ornamental. The partition *I* is 5 inches wide, and extends to within 6 inches of the bottom at either side, has turned edges, and is riveted to the front and back. In use, to start the fire, a direct draught is made by opening the damper *J*, after which it may be closed to turn the draught through the lower branch pipe into the central part of the radiator, where it descends, passing the lower ends of the partition, *I*, into the side passages, where it ascends and enters the upper branch pipe, leading to the smoke-pipe *E*. The bottom should have a collar to slide within the upright part, to facilitate cleaning when necessary. If there is no hearth-stone to set the radiator upon, the bottom may be filled with an inch deep of coarse plaster, which will make it safe even on a carpet. In setting the radiator, an inch or two of open space should be left between it and the chimney back, (just the thickness of the interior wall-plates of the mantle, against which the radiator should join.) Into the bottom of this space air may be introduced from the outside of the house, through a 2-inch tin pipe. The air thus let in becomes heated, and escapes around the margin, furnishing a pure healthful supply to the room....**Construction.**—The estimate below provides materials, and methods of construction similar to those described last month. The form and arrangement of this building admits of its being erected in sections; the central or main part may be first put up, and the side extensions added as means or necessity requires or allow. In localities where it is difficult to get dressed lumber, rough boards may be used for the siding, put on vertically and battened, but in this case it would be practical to paint the cornices and other dressings only with lead and oil—using a lime-wash for the rough work. A durable wash may be made by slaking freshly burned lump lime in hot brine. This can be colored by adding dry stainers as desired, and may be applied with an ordinary white-wash brush. Such rough work would greatly reduce the cost, and, if properly done, add a feature of rustic beauty, quite becoming in this class of building.

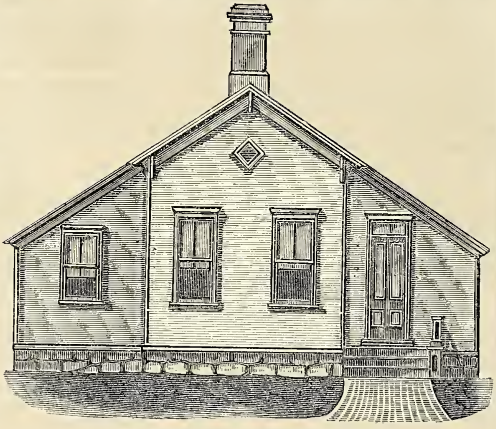


Fig. 1.—ELEVATION OF FRONT OF HOUSE.

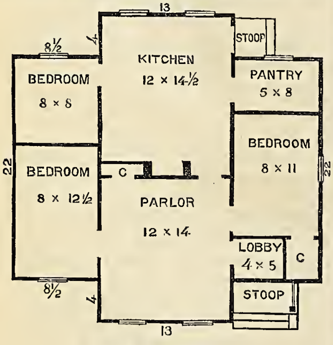


Fig. 2.—GROUND PLAN.

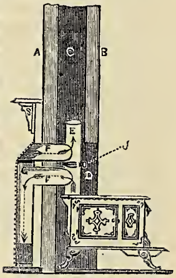


Fig. 3.—RADIATOR.

Estimate cost of materials and labor:

340 feet stone foundation, at 5 cents per foot..........	17.00
1000 bricks in chimneys, laid, at $12 per M...............	12.00
290 yards plastering, at 25 cents per yard...............	72.50
800 feet of timber, at $15 per M........................	12.00
2 sills, 4x6 in. 30 feet long.	
2 sills, 4x6 in. 13 feet long.	
2 sills, 4x6 in. 22 feet long.	
4 sills, 4x6 in. 9 feet long.	
8 posts, 4x6 in. 13 feet long.	
2 plates, 4x6 in. 30 feet long.	
2 plates, 4x6 in. 13 feet long.	
2 plates, 4x6 in. 22 feet long.	
300 wall strips, at 13c. each........................	39.00
70 plank rough spruce, 1¼x10, at 16c. each.....	11.20
130 siding, dressed pine, ⅞x10, at 25c. each............	32.50
176 shingling lath, at 6c. each.......................	10.56
30 bunches shingles, at $1.50 per bunch................	45.00
82 flooring, dressed spruce, at 20c. each................	16.40
8 windows, at $5 each, $40; 10 doors, at $3 each, $30.	70.00
Closet and base finish, $16; Cornice materials, $15	31.00
Nails, $10; Painting, $60; Cartage, $14.	84.00
Carpenter's labor, $75; Incidentals, $21.84	96.84
Total cost, complete	$550.00

[The exterior of the above cottage should not be taken as an example of the architect's taste, as we are sure it is not in accordance with our own. In meeting the requirements for a house with certain rooms of a given size, and all to come within the cost of $550—every dollar had to be made to tell most effectively. Still, we would suggest as to this, as we did with respect to the cottages given last month, the great fault is the absence of all shelter to the front door. The house has a most inhospitable look, and we would dispense with something in the construction for the sake of securing a piazza or veranda of some kind.—Ed.]

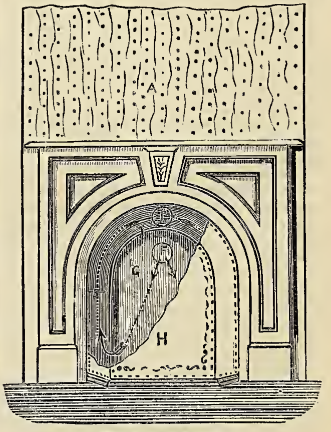
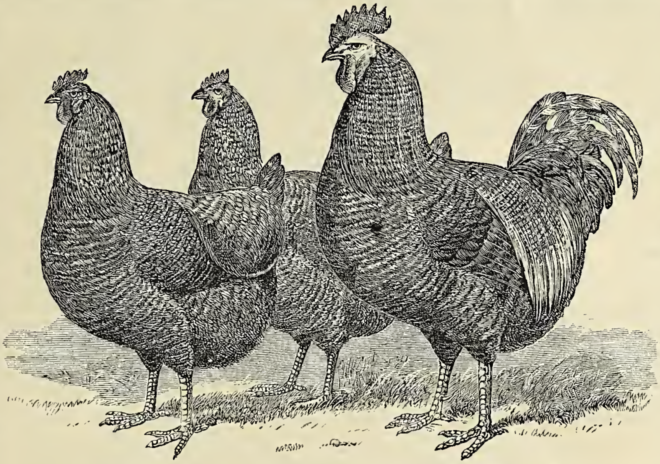


Fig. 4.—RADIATOR.

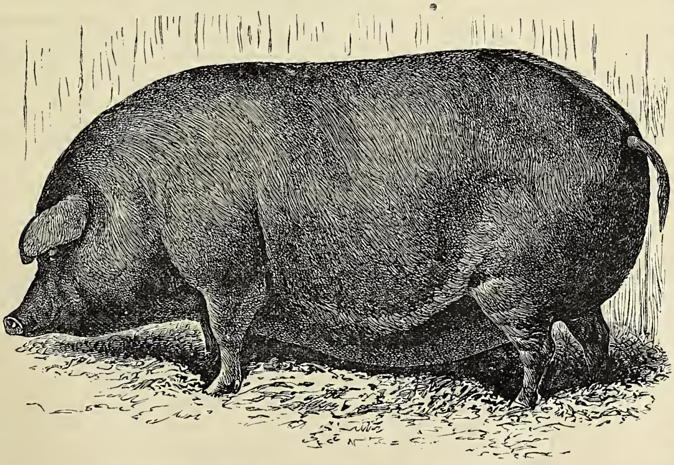
Improved Plymouth Rocks.

The very handsome breed of poultry known as "Plymouth Rock," is deservedly becoming very popular among those who keep fowls for profit. These fowls, as may be seen from our illustration on this page, which has been carefully drawn from a trio of living birds, possess many favorable characteristics. First among the good qualities of a fowl, is size. This the Plymouth Rocks have in an unusual degree. There are many excellent breeds of poultry, which are all that can be desired except as to size, and the lack of this is fatal to their popularity; for, after all, profit is the chief object with most people in choosing a kind of fowl to keep. Hardiness of constitution and vigor; pleasing form; handsome and attractive plumage, and prolific production of eggs, are all very desirable qualities in fowls, and these all belong to this breed. It will probably be noticed that the birds pictured in our illustration, are remarkably heavy-bodied. This is a peculiarity which belongs in an especial degree to a strain bred by Mr. F. H. Corbin, of Newington, Conn. This form of body, which is more like that of the Dorking than any other fowl, occurred accidentally, we believe, and the fowls with which this peculiarity originated, in Mr. Corbin's yards, were bred from with care, and their desirable shape has been permanently fixed. The future of the Plymouth Rocks will depend greatly upon the care or fortunate success with which they are bred. Difference of taste leads breeders to favor different styles, and thus "strains" are originated. If these styles are made to depart too much from a rigid standard, there is danger that an important and essential point may be sacrificed for some minor fancy. To prevent this, and to induce or to enforce care and consistency in breeding, it would be well that a very close adherence to the standard be insisted upon in all exhibitions, and that a very rigid one be adopted. In the case of the birds here represented, they come fully up to the accepted Standard of Excellence of American breeders, and meet it in every respect. The points required are: the breast to be "broad, deep, and full," and the body to be "large, square, and compact." The form of these birds is therefore nearly perfect, and if all breeders of the Plymouth Rocks emulate Mr. Corbin's skill in taking advantage of favorable accidents in breeding, and in fixing them upon his strain, or in using care in selecting birds for breeding, as any skillful breeder may readily do, the future history of this breed will be a very gratifying one. Among some of seventy breeds recognized in the American Standard of Excellence, there are only two of American origin, viz., the old-fashioned Dominique and the Plymouth Rock. The latter originated in Connecticut, and after some years of careful breeding, has been brought to such a condition of merit, that it is now one of the most popular breeds, and promises to be one of the most suitable for farmers, and attractive to amateurs. The birds here shown are entered in the American Poultry Record; the cock is Cæsar (5,970), the hen in the foreground is Pauline (5,972), and the one in the rear is Juliet (5,971). This strain of Mr. Corbin's has been favorably noticed by the best poultry authority in the country, a compliment which it certainly deserves.



IMPROVED PLYMOUTH ROCKS, BRED BY F. H. CORBIN, NEWINGTON, CONN.

Duroc or Red Swine.



DUROC SWINE, BRED BY WM. M. HOLMES & SON, GREENWICH, N. Y.

The farmers of New Jersey, Pennsylvania, and parts of New York, have long been acquainted with a breed of hogs known as "Jersey Reds." These have been a very favorite kind of swine on account of their fine, small bone; long, deep, round body; good feeding qualities, and hardy constitution. Some years ago, these excellent hogs were taken in hand by some breeders more than usually careful, and have since been considerably improved, so that, at the present time, this breed will challenge comparison with any other whatever for all the valuable points which make swine desirable or profitable. We have noticed of late that these red hogs have become widely distributed, a large sale of them having occurred in Kentucky, where they were favorably received by the very critical buyers of that well-known breeding State. When at the N. Y. State Fair, at Rochester, in September last, we saw a good specimen of these swine, which was exhibited by Wm. M. Holmes & Son, of Greenwich, Washington Co., N. Y., who make breeding them a special business. We have been favored by Mr. Holmes with a photograph of this animal, from which we have prepared the engraving here given. The picture is, therefore, no fancy one, but an exact portrait of the animal, so far as photography and careful drawing in copying can produce it. In all photographs, there are some exaggerations, the effects of which are so well known, that they have no detrimental effect on the subject, any more than the converging lines of a perspective drawing would mislead a person into supposing they were not really parallel. Thus the central portion of the photographic picture is an exact copy of the object, while the extremities are always more or less enlarged. If proper allowances are made for these, we then get a life-like representation, more nearly exact than any artist could possibly draw one by hand. In this portrait, the head and ears are not so fine as they should have been, or are in the living animal; nevertheless, we get a very good idea of what this breed of swine really is. At the National Swine Breeders' Convention, held at Indianapolis in 1871, it was decided to call this breed the Duroc, and it is now so called by those who give attention to it. The history of the breed dates back over 50 years, or to 1823, when Mr. H. Kelsey, owner of the noted horse Duroc, imported a pair of red hogs from England. A Mr. Frink, of Saratoga Co., N. Y., procured a boar pig of a litter from this pair, and named it Duroc, after the famous horse; hence the origin of the name, under which the breed has become popular in that locality. The pigs themselves are reasonably supposed to be related to the Berkshire; the old Berkshires were frequently reddish, or sandy-colored, and spotted with black, and had lopped ears. The Durocs may be properly considered to more nearly represent the old Berkshires, than the trim, smooth, prick-eared, blue-black and white-faced and white-footed modern Berkshire, as these points are all brought from foreign blood; while the red hogs have never lost their ancestral character, except so far as it has been improved by selection and good breeding. At least this is claimed for these hogs by their admirers. Their history all through, tells a story of quick feeders, with necessarily quiet dispositions; hardy, healthy, with great capacity for flesh and excellent quality of meat when dressed. They take naturally to grass, and may be wintered on hay in great part, as they eat it as readily as sheep will do. The animal given on the preceding page, is 19 months old, had no grain from April last until Sept. 24th, when he was sent to the fair, weighing then 476 pounds. On Oct. 24th, or 30 days afterwards, he weighed 570, gaining 94 lbs., being fed solely on raw corn-meal and water. He is 32 inches high, 5 feet 8½ inches long, and girts 6 feet. His belly reaches to within 3 inches of the ground when standing. In a recent case, 52 of these hogs fattened at Salem, N. J., at 18 months old, averaged, when dressed, 523 pounds; the lightest weighed 460 pounds. With such a character as this, the Duroc is certainly worthy of being known everywhere.

Among the Farmers.—No. 23.

BY ONE OF THEM.

Farmers should be Business-men.

I suppose we are all apt to over-estimate qualities which we do not ourselves possess. It is so with me, and possibly from this cause do I wonder at, and admire, and even covet the possession of real business instincts. This is, in fact, a quality of mind possessed in such varying degrees, that we find in all professions and trades, some, or many, the aim of whose life is to make money. They usually succeed, while others, with precisely the same opportunities, and of equal ability, distinguish themselves in some other way. It is this *business ability* that enables thrifty Germans to work into almost every farming neighborhood, take farms on shares, buy little farms of their own, gradually become possessed of so much property, that the familiar first name is dropped, and "Mr. Schwartz" is known far and near as the best farmer in the neighborhood. At home he would have remained the plodding peasant, here, with the absolute freedom to "dig or die," Hans gains the will to *do*, and to lay up and wisely invest money, not in banks and "securities" which are absurdly insecure, but in his own business. Of course he has ever a watchful care over what he has earned so hardly. Many an Irishman is working gradually to the front in the same way, but the Germans have the advantage in being better educated, and trained to greater independence. It is rather hard to see the fine old farms thus pass into the hands of foreigners, who are often untutored people, but they have *business talent*—not necessarily an inordinate love of money, but a love of making it, and the ability to know what to turn their hands to to gain it. We ought to develop this faculty in our children, with all care that it do not run into avarice, and that they gain, at the same time, in the course of their education, notions of culture and refinement, which will allow them to properly use their means.

The Guernseys as the Farmer's Cow.

A year and a half ago a herd of Guernsey cows, heifers, and one bull, were landed in New York, and shipped up to Farmington, Conn. There they were distributed among some twelve farmers. I saw them landed, and had not seen them since, until a few days ago, when I happened to be near, and visited the herds in which they are. They have done very well, one or two have died, but from no fault of constitution or failure to acclimate. Guernsey cows cannot survive free access to the meal barrel for a night, any better than natives, and one shuffled off her mortal coil in this unsentimental way. I found their owners not entirely unanimous in the opinion that, as to each, his own cow was the best of the lot; but this satisfactory sentiment was very general, and the positive assertion that in each herd the Guernsey, or one of the Guernseys, was the best cow, was frequently heard, and I think almost universal. They have improved very much. All have good udders and teats, all yield intensely yellow butter, among them are several 18-quart cows, and the youngsters are really a very fine lot.

There are practically good points about a Guernsey cow which plain farmers, and even their hired men, appreciate. Their good size, their naturally thrifty look, (comparatively few "milking down" very thin,) the good size of their calves, their strong appetites, and general hardiness, in addition to their large average quantity of the richest milk and the most highly colored butter known—these are the points which make the farmers enthusiastic about Guernseys.

It is a very pleasant thing to find the farmers of any neighborhood so enthusiastic—or if not that exactly, yet I may say sensibly interested, in any thing concerning their own profession, as the Farmington people are about Guernseys. I wish *my* neighbors could be interested in something. I don't propose to turn Missionary, the task is too hopeless.

Mr. Storrs' Reclaimed Swamp.

A few months ago I visited the farm of my friend, Mr. Augustus Storrs, in Tolland Co., Conn., and I believe wrote to the *American Agriculturist* about a really great job he had undertaken in reclaiming a piece of swamp land. The land lacked mineral matter, and the season was unfavorable for applying it economically after the surface was anything like level. Sand and loam from the surrounding hills and knolls must be hauled out, spread in winter, if he would do it economically, for then horses and cattle can go on all parts of the swamp, and the sand can be spread very evenly. I have been getting reports from the crops now and then, and I think the last is worth repeating. It seemed worth while to invite the Committee of the Tolland Co. Agricultural Society on Reclaimed Land, and the one on Crops entered for Prizes, down to see the farm, the reclaimed swamp, and the crops upon it and elsewhere. They came, and during the walk about the farm, Mr. Storrs asked one of the committee, "How in the world it was that people measured their corn so as to report 125 bushels of shelled corn to the acre?"

How Some People Measure Corn.

"I'll tell you," said Mr. Committeeman, "we measure a square rod in the field in two or three places, but make sure that the corn is as good on the measured square rods as it is any where, then, when the corn is cut, these square rods are cut up and stooked together, and as soon as possible husked and shelled. It is very green, to be sure, and will shrink perhaps 20 or 25 per cent, but it is 'shelled corn.'" George had his orders very soon. They were to stake out several square rods, and not to select the poorest, to cut them up with the rest of the field, and to husk and shell as soon thereafter as possible. Now that Mr. Storrs knew *how they did it*, he was bound to test the process. The results justified his anticipations, and the promise of the soil. The average yield of the several square-rod patches was 26 quarts and half a pint, and this is equivalent to 131¼ bushels to the acre. The very best of the corn was not in the reclaimed swamp, but just upon the edge of it, now dry, and getting more or less earth from the hill. My friend is quite delighted at the success of his experiment in reclaiming swamp land, but I think still more, as to corn, in finding out "how they do it," for it would seem that "they all do it."

The place Roots should occupy

in our agriculture, is a much more prominent one than they do at present. Yet there has been a notable increase in the quantity of seed sold—especially of mangels and Swedes; sugar-beets also are sown in largely increased quantity. Whoever sows a patch large enough fairly to test their merits, either in the production of milk during the winter, or increasing the flow during the spring months, before the grass starts, or rye is fit to cut for green feed, will try a larger one the next year. Mangels and sugar-beets, without doubt, are best for the flavor of the milk. They also increase the flow largely, but whether or not they produce a relatively greater increase in richness of the milk, I have not data to establish. My own experience, and that of others whom I might name, indicates that cabbages increase largely the percentage of cream and butter. The tops of Swedish turnips do the same, and I presume that the roots do likewise, but of that I speak with less assurance.

People who make "dollar-a-pound" butter, can afford not to use either cabbages or Swedes. Farmers who send milk to a creamery, should establish a rule among themselves, that neither cabbages nor turnips should be fed to milch cows, for among a dozen or twenty parties who bring milk, and would feed turnips if they could, there would surely be some careless ones, and the milk would get the turnipy-odor flavor, which is so disagreeable. When perfectly sound cabbages or roots are fed just at milking time, there is no trouble about the flavor imparted to the butter—at least that is our experience, and I do not hesitate to feed them liberally. Decaying roots, leaves, or cabbage heads, however, do affect the milk, even when fed at this time. The pure vegetable flavor, however, seems to be dissipated by the breath, and through exhalations from the body, within 8 or 10 hours.

Among all ordinary farm crops there is none which produces an equal amount of nutriment with Swedish turnips, in the same length of time. Next to them I suppose cabbages and English turnips take rank, and then mangels and sugar beets. Swedes may be raised on any ordinarily good mellow ground, with only a barrel of superphosphate, or even less, to the acre, applied in the drill, and we generally get a good crop for market if sowing is delayed until the middle of July, but when the crop is intended for feeding, it is just as well to have large overgrown roots, and so the earlier after the first of June the seed is in the ground, the larger the roots will be.

Wm. Crozier's Practice.

I was out at Mr. Crozier's place, at Northport, L. I., the other day, and saw a really very good crop of Swedes, which had been sown upon oat stubble, and the land, after once or twice "cultivating," during which operations it was kept quite flat, was sown with wheat, which was harrowed in with a harrow-toothed cultivator. The roots had been thinned to about a foot apart, and were making their best growth, being larger than one's fist October 15th, and there was a fine, even stand of wheat. The chances are that Mr. C. will have the great bulk of his Swedes, of just the best market size—say 4 inches in diameter. English turnips would give a good deal more in bulk of fodder, possibly nearly twice as much, but no more nutriment. There would be twice the cartage, twice the storage room, and twice the expense of handling, with no choice as to what to do with the crop. The English, or soft turnips, must be fed; the Swedes may either be fed or marketed, for there is almost always a fair market for them during the winter, which is available for those who live within easy reach of New York or other cities.

Seeding Down with Turnips.

Mr. Crozier's plan of sowing wheat with turnips, leads me to think of sowing grass seed with turnips. We have been so scorched of late, that I for one shrink from sowing grass seed in the spring, and the rye I raise grows on poorer land than I am willing to seed down to timothy. Hence it appears best to sow grass by itself in August, after some summer crop is taken off. Why will it not be a first-rate plan, after taking off oats or millet, or early potatoes, to plow in some manure if there is any to spare, or apply a barrel or two of superphosphate to the acre, and drill in turnips (Swedes) twenty inches to two feet apart, and after going through the rows twice with the harrow-cultivator, to sow grass seed. I think I would be surer of getting a good seeding, than were I to depend upon seeding to grass with the oats in the spring. On our soil clover does not winter-kill, and it may be sown in August perfectly well.

Mangels.

This root is everything the milk producer needs as succulent food for his cows during the winter. With plenty of corn stalks and mangels, or sugar-beets, anybody can make good milk. Brewer's grains, starch feed, and such foods, will make sickly milk, but cows thrive on beets and corn-fodder, with a little rye bran, or even without the last article. Mangels and beets need the whole season to make full crops. This is the only drawback to their culture. Good, mellow ground needs to be deeply plowed in the autumn, and in the spring thrown into straight ridges, or drills, 30 inches apart. Manure—a well worked compost is best—should be spread liberally in the drills, and this covered with the plow, leaving high ridges over the manure. A light roller flattens the ridges down, so that the seed may be put in with a seed drill. This preparation makes subsequent cultivation easy. The earth on the flanks of the ridges may be hoed down and laid back again repeatedly, with the Share's horse-hoe, an implement which I value above all cultivators and kindred tools, for working in corn, potatoes, or root crops. Mangels may be sowed as late as the first week in June, but it always entails a real grief to the farmer to be obliged to stop them just when they are growing so well in October, in order to get them under cover or in the pits before they are injured by the frost. They do not bear much freezing. A frost that wilts the leaves, and even forms a crust upon the ground, will not damage the roots, but that is a warning to be heeded; two or three nights in succession when the ground freezes, will seriously damage a crop of beets or carrots. Besides, the loss of the tops is to be avoided; these may be fed to the stock to good advantage, if the harvesting can be made to stretch through a week or two. The leaves must, however, be laid in quite small heaps, or they will heat and become worthless. I meet with no more gratifying evidence of improvement in agriculture, than the increased attention given to root crops, which is especially observable in New England.

It will certainly pay every farmer who wishes to produce milk in winter or early spring, or who wants his cows to come through the winter in the very best order, to prepare his land during the winter, if he has any chance to do plowing, in anticipation of putting in mangels next spring. I do not intend to omit the mention of parsnips and carrots in writing about root crops. Parsnips are economical food for cows, though the produce per acre does compare with that of beets, yet there is no better milk-making diet, and there is no trouble about housing them in winter, except for winter use. The greatest amount of milk I have ever known to be produced by cows, is when they have had a full supply of parsnips in the spring. Of course, grain in some form is fed also. Say 12 qts. of bran, 6 quarts of fine corn meal on cut hay, and all the parsnips a cow wants to eat, will make her give milk, if she is capable of it.

Talks on Farm Crops.—No. 10.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

The Squire had a great growth of corn-stalks, but the corn did not ear well. He planted it in hills with a machine, 3½ feet apart. But the machine dropped too many kernels in a hill, and the corn was too thick to ripen. "And yet," said the Deacon, "when corn is drilled in, there are more plants per acre."—"True," said I, "but they are not so close together. They are scattered along the row. When you have seven plants in each hill, 3½ feet apart, you are pretty certain to have poor corn; but if those seven kernels were planted along the row, six inches apart, the corn, if the land was rich enough, would be none too thick. I have seen such a crop ripen perfectly. I think you will find that nearly all the large crops of corn that we read about, are raised on rich land, are planted early, and have more plants per acre than the ordinary crops of corn. But if the land is poor, there is nothing to be gained by thick planting. As a rule, the sun is capable of maturing more corn than the soil will sustain, and our main object is, to make the soil richer. When this is done, then we can have more plants per acre, but they should not be too close in hills. If the machine would make the rows 3½ feet apart one way, and then drop *two* kernels 12 inches apart, or one kernel 5 or 6 inches apart, we could raise more corn than if in hills 3½ feet apart each way. And we should get more fodder, which, in this section, is quite an object."

"Speaking of corn," said the Doctor, "I would like to know why 'Evergreen Corn' is not so evergreen as formerly. I raised a good crop of it this year, expecting to have it for several weeks, but it soon got so hard that it was not fit for the table."

"I have heard the same complaint," said I, "and the fact was used to show that varieties degenerate. But the difficulty may be accounted for on an entirely different hypothesis. The variety has not degenerated. It has been *improved* by the seed-grower. The difficulty with the seed-grower is, to get this variety of evergreen corn to ripen its seed. He wants a good crop of sound, mature corn. He 'breeds' for this object, and the fact that our so-called evergreen corn will now get ripe earlier than formerly, shows how easy it is for a skillful seed-grower to accomplish his object."

We may learn a useful lesson from this. When we want corn to ripen perfectly, we must select for seed such ears as grow the largest and ripen the best.

"That is all very well," said the Doctor, "but I want green corn for the table."—"Very well then," said I, "you must select your seed with this object in view. What *you* want, are ears of corn that will not ripen before frost comes. If any ripen, reject them. The others you must ripen in-doors on the stalks, and seed so obtained will be likely, if it grows at all, to give you evergreen corn."

Early varieties of potatoes, other things being equal, cannot yield so large a crop per acre as the late varieties. "And yet, last year," said the Deacon, "your Early Rose and Early Vermonts and Snowflakes all yielded more per acre than the Late Rose in the same field, and considerably more than the Peachblows in a field adjoining."

"True," said I, "but you overlooked that little clause 'other things being equal.' The conditions were not the same. The 'bugs' hurt the late varieties far more than the early ones, and a severe drouth set in about the time the late varieties ought to have been making their fastest growth. If we had killed the bugs, and if the season had been as favorable for the late varieties as for the early kinds, the late crop would have been the largest per acre. In a favorable season for early varieties, and a favorable one for late varieties, the late ones will produce the largest crop. They have a longer time to grow. If the early maturing kinds are to grow as large as those which have a longer time to grow in, *they must have richer food.*"

The Peachblow was formerly one of the most profitable varieties of potatoes grown in this section. It was a vigorous grower and a "rank feeder." If there was any food to be had, it would find it, and it would keep on growing until the frost stopped it. And yet the average crop was not over 125 bushels per acre.

We are now planting early varieties. And there are good reasons for the change. But let no one suppose that land which, in a favorable season, would produce only 125 bushels of Peachblow potatoes per acre, will produce 125 bushels of Early Rose. If we want a large crop of early potatoes, we must have rich land—and that, whether the potatoes are planted early or late. They grow rapidly and mature early, and must have rich land.

This year I planted my potatoes in rows, 2½ feet apart. We made furrows with the plow, and spread some rich, well-rotted manure in the furrows, and dropped the potato sets on the manure, 12 to 15 inches apart, and covered with the plow and then rolled—first lengthwise of the furrows and then crosswise. The manure did not *hurt* the potatoes. We never had potatoes of such superior quality—especially the Early Vermonts. The crop was a good one, but I am satisfied the manure did not do as much good as it was capable of doing. When we dug the potatoes, the manure was found to be dry and comparatively unchanged. It would seem as though the plants had used but little of it. It seems to me that the better plan would be to apply the manure on the land the autumn previous.

And the same remarks will apply to early cabbages and onions. I applied an abundance of rich manure this spring to both these crops, but did not get the full benefit. Mr. Hooker tells me that he gets a better crop of Early Wakefield and Fottler's cabbage the second year on the same land than the first year. I knew that this was the case with onions, but supposed new land was best for cabbages. And I am not sure that such is not the case, provided the manure was applied in sufficient quantity the preceding summer or autumn. I imagine that this is the real point. We want the land thoroughly saturated with the dissolved manure. We apply a great deal more manure than the plants can appropriate. But this excessive supply of plant-food seems to be absolutely necessary for success in raising a good crop of early cabbages. For late cabbages, we may also want just as much manure, but the plants will appropriate more of it. There is not so much need of applying the manure the year previous. And I presume a crop of late cabbages leaves but little manure in the ground.

"I am glad to hear you make that distinction between early and late crops," said the Doctor, "I believe it is true. Six-rowed barley is earlier than two-rowed, and it needs richer and better land. Early peas need richer land than late peas. You can hardly make the land too rich for early peas, and you can hardly sow them too thick. And we may expect a better crop of wheat after six-rowed barley, than after two-rowed barley or oats—and better after early beans than after late beans."

"Our wheat," said the Deacon, who evidently wanted to change the subject, "never looked more promising than it did this fall. It is a little too good, and the early sown fields are badly affected by the Hessian fly. I greatly fear it will be found next summer that the crop is seriously injured."

"There can be little doubt on that point," said I, "and if I lived in a section adapted to growing spring wheat, I should make preparation for putting in as much as possible. We have an unusually large area sown to winter wheat, and we all hope for a good yield, as there can be little doubt that wheat next year will be largely wanted in Europe. Whatever the fate of the crop of winter wheat may be, we shall be safe in sowing as much spring wheat as possible—or rather we may safely sow all the land that can be got into good condition."

"It is too late," said the Deacon, "to do much in the way of preparation now."

"There is one thing," said I, "that may still be done where the ground is not frozen. Take a good, strong three-horse plow, and make furrows to carry off all the water. Take along a spade and a hoe, and wherever there is any water standing on the land, let it off. It is astonishing what a difference it makes in the condition of the land in spring. I would do this on all the fields, whether they are intended for wheat, oats, barley, corn, or potatoes—whether they are stubble or sod, wherever you can see water on the surface, let it off. Commence at the lowest point and work up. You will be surprised to find how much fall there is on land which looks perfectly level. A little labor now, will make a difference of a week or ten days in the time of sowing the wheat in the spring, and that may make the difference between a good crop and a bad one—the difference between success and failure."

"There is one thing," said the Doctor, "that may yet be done to increase the yield of wheat next harvest, and that is to top-dress the winter wheat early next spring with, say 200 lbs. of nitrate of soda, and 150 lbs. of superphosphate, and in view of the probable good price for wheat, it will be likely to prove a profitable application in sections not too remote from market."

"I do not know about that," said the Deacon, "but a dressing of hen manure, ashes, and plaster, sown early in the spring on light sandy knolls, where the wheat is yellow and sickly, sometimes has a surprising effect. But I like to save my hen manure for corn."

"On these light, sandy knolls," said I, "it is a good plan to draw out some barnyard manure in the winter, and spread it on the frozen ground or on top of the snow. It often happens that the snow blows off of these knolls and leaves them exposed, and a slight dressing of manure not only enriches the land, but affords protection to the plants."

I do not know anything that can now be done to save the plants attacked by the Hessian fly. The eggs or larvæ are in the plants, and they will destroy these plants next summer. But all the wheat is not affected. If not more than one-fourth of the plants are attacked, the field of wheat would next summer present a sorry appearance. And yet there are three-fourths of the plants uninjured. Now, can not we stimulate these remaining plants by top-dressing with manure, and so cause them to spread and tiller until they cover the ground?

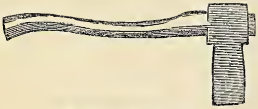


Fig. 1.—A POST AXE.

The first year I was at Rothamstead, Mr. Lawes had some wheat that was so thin on the ground, and so poor, that he thought of plowing it under. Instead of doing so, he top-dressed it with some Peruvian guano or sulphate of ammonia, and hoed the land between the drills. The wheat commenced to grow and tiller, and turned out a splendid crop.

In regard to hoing wheat, I feel certain that the operation would be highly advantageous, not merely in cleaning the land, but in encouraging the growth of the wheat. And it is a curious fact that while good, effective wheat-hoeing machines have been extensively used in England for over thirty years, none of them have yet found their way to this country. I believe one of these wheat-hoes was brought to our World's Fair, in New York, in 1853. But the time had not then arrived for their introduction. At the Centennial, I do not think any of these English wheat-hoes were shown, but we had an American machine on exhibition, which may yet find favor with our farmers. The real difficulty of the machines is simply this, our wheat drills do not have a *steerage attachment*. We sow straight or crooked, just as we guide the horses. The English drills, where a wheat-hoe is intended to be used, have a simple apparatus for keeping the drill coulters or tubes exactly straight, even though the horses deviate a considerable distance from the true line. Admirable as our drills are in other respects, it is impossible to use them to advantage for nice work, such as drilling mangel-wurzel, turnips, onions, etc., or for drilling wheat that is to be hoed with a machine. The tubes or coulters are not sufficiently rigid. They often swerve an inch or so, first on this side, and then on that. I have in years past frequently alluded, in the *American Agriculturist*, to this subject of hoeing wheat. We shall make little progress in the matter until we have drills, the coulters of which are strong enough and rigid enough to push a clod out of the line. In addition we shall also require a steerage attachment. With these, wheat-hoeing by machinery is an easy matter. That the operation will be beneficial to the land and to the crop, there can be no doubt.

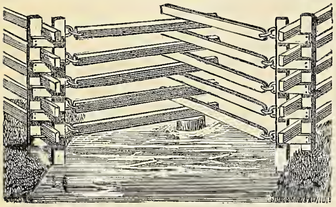


Fig. 2.—VERMONT FLOOD GATE.

Hints and Helps for Farmers.

A Home-made Post Axe.—"H. G.," Cheshire, Ct., sends a sketch of a home-made post axe. It is made of an old partly worn out axe with a narrow blade. This is drawn out by a blacksmith into the shape shown at figure 1 and tempered. It then answers all the purposes of an axe for holing posts.

Flood Fences and Gates.—"W. W.," Essex, Vt., describes a flood-fence for use across streams which are subject to freshets. The fence consists of posts set in the bank of the stream, and these posts are furnished with iron staples driven into them in places where the rails should be fastened. The ends of the rails are bored with half-inch holes, and are wired through the holes by pieces of fence-wire to the staples as shown in figure 2. The panel is laid down stream, the other ends of the rails being laid up as an ordinary worm fence; the lowest rail rests upon a stone or a post in the centre of the stream. In a freshet, the rails are loosened at the center of the panel, but are held by the wires and float, leaving the stream open. In case the stream is wide, a number of these panels may be made.

Another Flood Gate, of which a plan is sent by "W. H. M.," Tolersville, Va., serves the same purpose; it is a permanent structure, and when displaced by a freshet, comes back again into its position as soon as the water has passed off. It is shown at figure 3. It has been in use since 1866, and is found all that could be desired, as after a rise of water, it is unnecessary to see that the fence is made good. It is also perfectly hog-proof. It is described as follows: *A* is a large beam, used as a foot-way at high water; *B*, *B*, are posts planted in the banks of the stream, and connected with the beam *A*, which is at the highwater mark; *C*, *C*, are pieces of 2x3 oak scantling; hinged to the beam *A;* at *D*, is a stout pole placed just below the surface of the water on the down stream side of posts *B*, (being below the water it is not seen), against which the gate rests at low water; *E*, *E*, are abutments of boards nailed to posts *B*, *B;* *F*, is inch boards nailed close together, to the uprights *C*, *C*. When the stream is high, the gate is lifted, and all trash or floating stuff passes through without hindrance. When the water falls the gate rests as before on the foot pole.

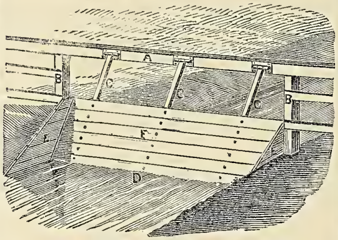


Fig. 3.—VIRGINIA FLOOD GATE.

Screen for a Fish Dam.—Many farmers own streams of water which they would stock with fish if they could prevent loss at time of freshets. A method by which this may be done is illustrated at figure 4. A number of bent iron rods are placed in holes bored in the plank at the top of the dam. To these rods a piece of fine iron netting is fastened by wires. The rods are curved inwards so that leaves or floating substances, which may gather in the screen, are caught and held as the water rises, leaving a clear space beneath them for the water to escape. Fish that would otherwise escape over the dam are obstructed in their passage by the curved screen, unless the water rises above it, which it will not do if the screen is made sufficiently long and wide. A screen bent in this way may also be used to prevent fish escaping up stream. In time of high water the floating matter will pass over the top, while the fish, following the lower part of the stream, will find their upper passage barred by the curve of the screen.

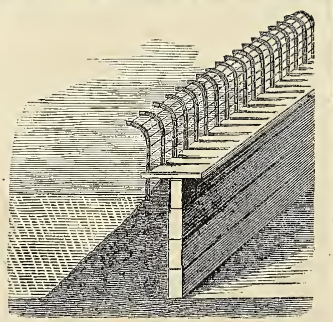


Fig. 4.—SCREEN FOR A FISH-DAM.

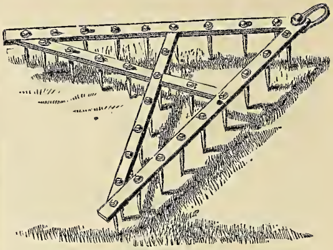


Fig. 5.—TRIANGULAR HARROW.

A Triangular Harrow.—"B. R.," Freedom, Ill., sends a drawing of a triangular harrow, which he has found very cheap and useful. This, shown in figure 5, is made of 3x3 oak or maple scantling, fastened together with bolts. It has teeth of ½-inch square iron. The engraving shows its construction very plainly. The principal cost in making this harrow is for the teeth.

A Cheap Farm Gate.—"An old subscriber" favors us with a description of a cheap and useful farm gate for a field or garden, and one that may be made quite ornamental by choosing proper materials, such as red cedar poles, or irregularly crooked laurel stems, which may be found in many localities. It is shown at figure 6, and is made as follows: take poles four or five inches thick, one 4½, and another, 5½ feet long; bore 2 inch holes at proper distances apart, into these holes insert smaller poles for the bars, and wedge the ends securely. Set the gate posts, having the chief post first well placed in the ground. Bury a block of red cedar at the foot of this post, and bore a large hole in it, burning it out with a hot iron to clear the wood. This will make it last longer. Trim the hinge post of the gate to fit the hole in this block, which serves for the lower hinge, and prevents sagging. For an upper hinge, sharpen the upper end of the hinge post, and bore a piece of plank or timber to fit the point. Point the end of this latter piece; bore a hole through the gate post; insert this sharpened end and wedge fast. When a latch has been provided, the gate is finished, and all without the cost of one cent for purchased materials.

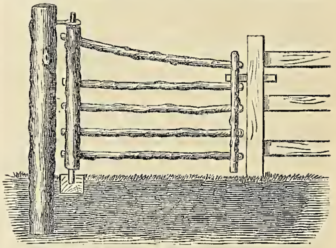


Fig. 6.—A CHEAP FARM GATE.

A Home-made Corn-Sheller.—"J. M. M.," Waterhouse, Neb., describes a method of shelling corn, which we have illustrated at figure 7. A box or barrel is procured, and a cross piece of stout plank or scantling is fitted upon it. A number of blunt-headed nails or spikes are driven into this cross piece, leaving the heads projecting a quarter or half an inch above it. To use this machine a person is seated at each end of the cross-piece, and each grasping an ear of corn, he rubs it upon the projecting spikes, quickly shelling off the grain. The grain falls into the box or barrel underneath. The cross piece is fixed to be lifted out when desired.

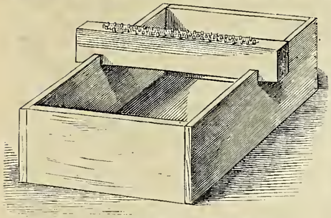


Fig. 7.—A HOME MADE CORN SHELLER.

A Barn Basket.—" W. S. L.," Okahumka, Fla., describes a home-made basket or box for use in the barn or in gathering crops. It is made of two pieces of light board, 12 inches square, for the ends, fastened together by laths 16, 18, or 20 inches long, for the bottom and sides. These are securely nailed. The handle consists of a piece nailed to each end, and connected by a light bar, as shown in figure 8. This box is quickly made, and will be found very handy for gathering many crops in the field, as it may be made to hold exactly one bushel, half a bushel, or any other definite quantity, by changing the size.—To hold a bushel, which is 2,150 cubic inches, the box may be scant 20 inches long, 12 inches wide, and 9 deep, or scant 18 inches long, 12 inches wide, and 11 inches deep. For half a bushel, scant 18 inches long, 10 inches wide, and 6 deep; or 15 inches long, 9 inches wide, and 8 inches deep. For a peck, 10 inches long, 9 wide, and 6 deep; or 8 inches square, and scant 8½ inches deep.

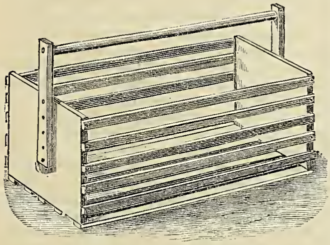


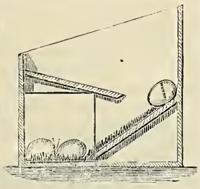
Fig. 8.—CONVENIENT BARN BASKET.

The Close Breeding of Poultry.

Many questions are asked by poultry breeders relative to the selection of breeding birds. There is a lack of information, as well as a strong prejudice, in regard to what is known as close breeding; that is, breeding from closely related animals. Many people consider this to be injudicious, and hurtful to the progeny, though ample experience has shown this idea to be erroneous. If any injurious effects have followed close breeding, they have resulted from unwise, or utterly improper mating. The art of breeding for a distinct purpose is not easily learned. A certain natural aptitude, and long experience, are necessary for success in breeding. There are many points to be considered, and a very complete acquaintance with the materials used, is indispensable. There are numerous precedents, which might be quoted, to show that all our most valuable families of live stock are most closely bred. A most noted Short-horn cow was descended, for six generations, with the same sire in each. This is closer breeding than is possible with nearly all poultry breeders, for a cock is rarely kept in any yard for six years, his natural life not being long enough. As regards poultry, it is true that our most valued breeds have originated from single pairs, and must necessarily have been closely bred. In our own experience, which is neither short nor narrow, we have found the second generation of chicks from the same cock, to be far better than the first, and if we were breeding for feather or quality, we should by all means totally ignore relationship, provided the required points were present in the birds to be mated. In case of the Plymouth Rocks, for example, we consider it absolutely necessary for success, in securing a permanent and strongly marked breed, to mate related birds, because then we can be sure of their antecedents. If we procure eggs from a breeder who has mixed the blood of his flock, we get chicks of all colors, light, dark, and even black, with black legs. This has happened to us the past season, as has also the contrary, with eggs from fowls that have been closely bred in the same yard. Wherever we find a flock even in color and size, we may be sure that there has been close breeding, and from these we may expect good chicks. This valuable breed, (the Plymouth Rock), has yet to be established. We hear of breeders desiring to start anew, being dissatisfied with the material now to be procured. To such we offer the advice, to take the best they can get, choosing well-marked birds from such yards as they know to have been closely bred. Then retain the cock so long as his services are successful, if it is found that his chicks are of the right kind; and select from these for breeding such as are found to possess the points that it is desirable to perpetuate.

A Nest for Egg-eating Hens.

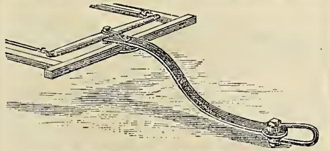
In the winter season hens frequently acquire the habit of eating eggs. Sometimes this vice becomes so confirmed, that several hens may be seen waiting for another one to leave her nest, or to even drive her off, so that they may pounce upon the egg, the one that drops it being among the first to break it. In this state of affairs there is no remedy, except to find some method of protecting the egg from the depredators. The easiest way of doing this is to contrive a nest in which the egg will drop out of reach. Such a nest is shown in in the engraving. It consists of a box with two sloping false half-floors; one of these being depressed below the other sufficiently to make a space through which the egg can roll down to the bottom floor. A door is seen in the side of the nest, through which the eggs can be removed. The sloping half-floors are shown by dotted lines. Upon the back one, close to the back of the nest, a glass or other nest-egg is fastened by a screw or by cement. The false floors may be covered with some coarse carpet or cloth, and the bottom floor with some chaff or moss, upon which the eggs may roll without danger of breaking. If the eggs do not roll down at once, they will be pushed down by the first attempt of a hen to attack them.



SAFETY NEST.

Plowing Gear for a Kicking Mule.

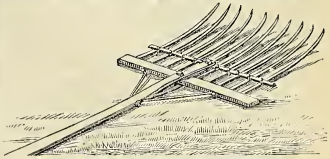
A correspondent asks for a plan for hitching a mule which has a habit of kicking when harnessed to a plow, but which goes very well in shafts. Kicking is a vice which sometimes belongs to horses as well as mules, and the following expedient has been found effective in curing it. Take a pair of light shafts from a wagon, or make a pair, and fit to the end of it a bent strap of iron, as shown in the illustration. When the mule or horse is hitched into the shafts, the end may trail on the ground, and the beast may be exercised with the shafts alone. When used to these, the bent bar is fastened to a plow by means of a clevis, and any difficulty there will soon be overcome. This device has been used, not only for plowing, but for drawing a stone boat, railroad cars, and other similar vehicles.



PLOWING GEAR FOR KICKING ANIMALS.

A Leaf Fork.

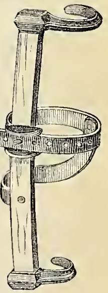
" B.," Statesville, N. C., sends a very timely and useful plan for making a fork to gather leaves—a work that is now seasonable and to be recommended. The fork, shown in the engraving, is made of tough ash, with 10 teeth, similar to the fingers of a cradle, three feet long, and slightly turned up. The head into which the buts of the teeth are inserted, is 30 inches long. A light cross bar of tough wood is fastened to the teeth, about 8 inches from the head, by means of copper wire and a light screw to each finger. A handle is provided and fixed in its proper place, being flattened somewhat to keep it from turning in the hand. The handle should be braced by two strong wires. With such a fork leaves may be loaded very easily and rapidly.



FORK FOR GATHERING LEAVES.

The Treatment of Kicking Cows.

It is safe to say that a kicking cow is not naturally disposed to this vice, but has been made vicious by some fault of her owner. There are few men who possess sufficient patience and kindness to so manage a cow, from calfhood until she comes to the pail, that she will be kind and gentle under all circumstances. There are nervous, irritable cows, that are impatient of restraint, which are easily and quickly spoiled when they fall into the hands of an owner of a similar disposition. One who is kind and patient, and who has an affection for his animals, is never troubled with kicking cows, unless he has purchased one already made vicious. Unfortunately, few persons are gifted with these rare virtues, and therefore, there are always cows that have to be watched carefully at milking times. Cows sometimes suffer from cracked teats, or their udders may be tender from some concealed inflammation, and they are restless when milked; so that, now and then, in the best regulated dairies, there will be cows that will kick. Many devices have been recommended to prevent such cows from exercising this disagreeable habit. Different methods of securing the legs have been tried. The best plan that we have heard of, or have tried, is the cow-fetter of Mr. H. J. Sadler, of Warren, Ohio, which is here illustrated. This fetter is fastened to the cow's near leg, by means of the strap in the center, the curved portions embracing the front of the leg above and below the hock. It will be perceived that, while the cow can move her leg to some extent, and is not hobbled, as when the legs are tied together, yet she can not lift it to kick, or to put her foot in the pail. We have seen this "fetter" tried upon a cow that had very sore cracked teats, and that kicked furiously when milked, but with the fetter she was unable to kick or hinder

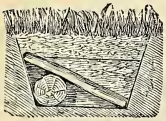


COW FETTER.

the milking. The fetter may also be useful when it is necessary to perform an operation upon a cow.

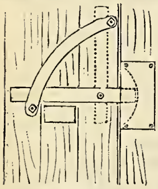
Log and Brush Drains.

"G. L.," Machias, Me., gives the following description of some cheap and effective drains, which he has been in the habit of using. These are made by laying poles of spruce or fir, 5 or 6 inches thick, in the bottom of the ditches at one side. Short pieces of lighter poles are laid, five feet apart, with one end upon this first pole and the other end upon the bottom of the ditch in a sloping position. Longer and lighter poles are laid upon these, and then overlaid with brush; the whole being covered with sods and earth. A drain of this kind answers very well upon wet lands, where the water will be always flowing and where the material is at hand. Where the drains are alternately wet and dry, the timbers will rot in a few years. The method of making them is shown by the engraving.


POLE DRAIN.

A Simple Safety-Latch for a Gate.

A latch for a gate that cannot be unfastened by a cow or other animal, and that may be very easily made, is shown in the accompanying engraving. It consists of a bar of wood, pivoted to the gate near the end, and having its greater part distant from the opening end of the gate, so that its weight keeps it in place. It is protected by a guard as shown. This guard, if desired, may be extended below the latch, so that a cow cannot possibly lift it with her horn or nose. As it is represented, it may be lifted a short distance, but the gate will not open until the latch is brought into a perpendicular position. The catch on the gate-post is protected by a covering plate; between this and the post is the space into which the latch rises when the other part falls. The operation of this latch is seen to be exactly the reverse of an ordinary one, and therefore, if securely fitted, it will puzzle the most accomplished gate-opening cow.


SAFETY LATCH.

The Improvement of Farm Roads.

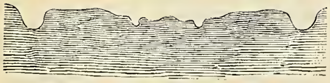


Fig. 1.—SECTION OF A BAD ROAD-BED.

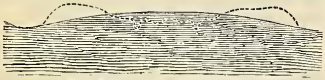


Fig. 2.—ROAD-BED IMPROVED.

The interior roads of the farm are not often either made or kept in an economical manner. There may be cases in which poor roads, with yearly repairs, are cheaper in the end, than those which, being good and permanent, need no repairs for many years, though such instances are very rare. For ease and economy—both terms generally meaning the same—a level, solid road is to be preferred. The farm, whether it be large or small, should always be laid out with reference to ease of communication from one part to another, and the needed roads should be built to be permanent. At this time we wish only to point out how farm roads may be made to secure the greatest economy in use. Where the surface is level, there is frequently more difficulty in keeping a road in good condition, than where it is rolling or uneven, and we often find a road-bed presenting the appearance shown in figure 1. It is evident that, on such a road, the teams must work at great disadvantage. The remedy is, to throw up the center of the road-bed in the way shown at figure 2, by moving the higher portions at the sides to the middle, and leaving the sides at least 18 inches lower than the center. It will be found of advantage, to keep farm roads in good condition, and covered with grass, which can be mown for hay. The land is then useful, and is not made a nursery for weeds. The wheel-ruts made by a season's use, should be filled with coarse gravel, or broken stone, for a foot in width, and the ruts worn by the horses' feet may be filled in the same manner. Earth is the worst possible filling. These ways then become permanent, and if kept in order by a day's work now and then with rake and rammer, they will offer no obstruction to a mowing machine, with which the grass upon the road may be mowed. The rammer, fig. 3, is a block of wood, 8 or 10 inches in diameter at the bottom, tapering to the top, and is four feet long. A handle is fixed at the top, and another about the middle. The foot is shod with a strong iron shoe. A road may be made in this manner upon level ground, with any kind of soil, that will be passable in wet weather. Where the ground is rolling, it will be found advisable to level the knolls, and fill up the hollows, as shown at figure 4. Where the knolls are not sufficient for this, or where the hollows sometimes become passages for water, these should be bridged. For this purpose, some low frames, or bents, of timber may be made, as shown in figure 5. These may be placed in the center of, or along the hollows, to support timbers for the roadway, which may be planked over, or covered with half-round small timber, as shown at figure 6. In place of these, stone may be used, where it is abundant, and low piers may be built, either of dry work, or laid in mortar. For a short hollow, one pier or wall may suffice, otherwise two or three may be made, and covered, as shown at figure 7, with timbers and planks or slabs. In placing the stone piers or timber frames, especially in situations where water may flow at any time, they should be bedded below the surface, and upon solid ground.

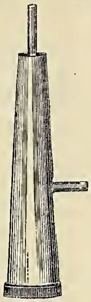


Fig. 3.
RAMMER.

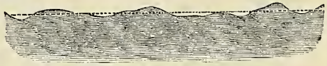


Fig. 4.—LEVELING THE ROAD-BED.

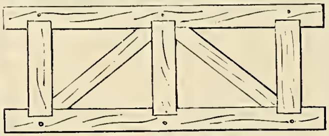


Fig. 5.—BENT OF BRIDGE.

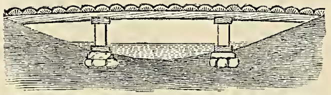


Fig. 6.—BRIDGE COVERED WITH SPLIT STICKS.

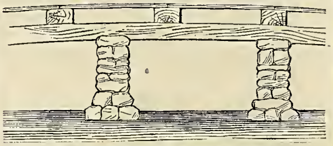


Fig. 7.—BRIDGE WITH STONE PIERS.

Tim Bunker on Tramps—How to get rid of them.

Mr. Editor: I haven't had much to say about Hookertown matters, last summer, not because the soil is barren, or Jake Frink and his company have done talking. You see summer is a lively time on the farm, and weeds won't stop growing, or the hay and grain harvests wait for you, while you are telling what your neighbors are doing. You see the course of things on a farm keeps moving from April to September right along, like a railroad train, and if you mean to make the season serve you, you have got to be at the depot on time every day. Things have been kept up square on the farm all summer. Mrs. Bunker has been up at 5 o'clock every morning, and the men folks have been in the field on time. The hay and grain are under cover, the rye is sowed, the barn-yard is covered with sea-weed and muck, and the corn is cut up and shocked, and the beans are pulled, and the cranberries are picked, and the frost may come as soon as it likes. Nothing but Mrs. Bunker's peppers are likely to suffer. The fact is, Hookertown was never so full of news as it is now, and some of the bottles will burst if they are not uncorked.

All summer long we have been bothered to death with tramps. They are a growing nuisance, and nobody seems to know just what to do with them. They are, with few exceptions, of foreign birth or parentage, in the prime of life, in good physical condition, decently clad, and as able to work as the average help upon our farms. The drift of travel seems to be here, as I read it is out West, between the large cities. They generally have friends, either uncles or cousins, in the next large town ahead, and want food and money enough to reach them. They travel under various pretences, but the real motive is almost always to sponge their living out of the community. They sometimes pretend to seek labor, but almost invariably refuse to work when the opportunity is given. They swarm on all our highways like the frogs of Egypt, coming into our kitchens and ovens, and kneading troughs. They beg from door to door, and get what they can from private charity, and generally get their lodging and breakfast at the expense of the town. Hookertown paid out $2,500 last year for the support of tramps—and the expense increases every year. They lodge in our barns and out-buildings, they steal corn from our fields, and fruit from our orchards, and when they can get a chance, steal from our dwellings.

The evil has made so much stir in the community, that Mr. Spooner preached about it last Sunday, taking for his text, "Fullness of bread and abundance of idleness was in her." Mr. Spooner generally hits the nail on the head every time, when he hammers away in the pulpit, but this time he drove the nail home in a sure place. He showed that the people and the town authorities who entertained tramps were to blame for this organized system of vagabondage. The people were humane and charitable, and were educated to sympathize with suffering, and to feed the hungry. He said, "the feeding of tramps was an abuse of their charity, and grew out of their ignorance of the character of these vagabonds, who lived in idleness, and ate the bread they did not earn. They were supposed to be strangers, homeless and destitute. As a matter of fact, every one of them had a responsible party behind him, who was under obligation to feed and clothe and shelter him. The ship-owner who lands an emigrant in New York, comes under obligation to the municipal government to support him in case he becomes chargeable, or to return him to the port whence he came. If the emigrant becomes a citizen, and gains a residence in any of our towns, the town where he resides assumes this obligation, and if he becomes disabled, he can receive aid from the town where he belongs. Our laws protect us against homeless vagabondage if we will execute them. The man who stands at your door asking bread, is not poor and needy, in the sense that he has no one to care for him. There is a responsible party behind him, and he begs simply because he expects to fare better at your hands, than in the alms-house, or other institution, where he belongs. The dainty beggar, who pleads misfortune at your door, as a rule, is a fraud and a hypocrite. He means to deceive you, and eat your bread without work. Now if Paul's doctrine be sound, that the man who will not work should not eat—it is wrong for you to feed this man who plans to live in idleness. You relieve no want of his, that is not provided for in a legitimate way. You only help forward the work of demoralization already far advanced in him. You put burdens upon your industrious neighbor, compelling him to pay taxes for the support of the idle and the vicious that throng the highway. You have no right to indulge your misplaced pity at the expense of your neighbors, who have to foot the bills yearly for the town entertainment of tramps. There is ample sphere for the indulgence of your compassion and charity, without encouraging one of the great public evils of our times. And if it is wrong for the individual to interfere with that divine law, which compels the eater to work, it is equally wrong for society to interpose. The town may feed and shelter its own citizens, who are really needy and helpless. It has no right to make paupers of able-bodied men by fostering their idleness and vice. Nothing but the constraint of hunger and suffering will compel the idle to earn their own subsistence. The constraint is wholesome for the individual, and for society. God has ordained the connection between personal toil and physical comfort, and 'what God hath joined together, let no man put asunder.'"

The tramp sermon made quite a stir in Hookertown. Deacon Smith said "amen" when he got out of the meeting-house door.—Seth Twiggs said, "I guess Mr. Spooner's head is about level to-day."—Jake Frink said, "It's as true as gospel, every word on't, but 'taint exactly the thing for Sunday."

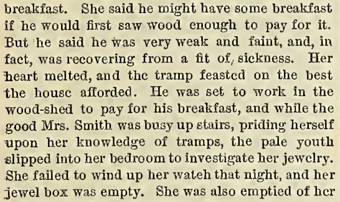
Mrs. Deacon Smith said she thought Mr. Spooner was rather hard on tramps, and she guessed she could tell a thief from an honest man, if he was a tramp. The next day a young man came along, looking very pale and hungry, said he had not had anything to eat for two days, and wanted some breakfast. She said he might have some breakfast if he would first saw wood enough to pay for it. But he said he was very weak and faint, and, in fact, was recovering from a fit of sickness. Her heart melted, and the tramp feasted on the best the house afforded. He was set to work in the wood-shed to pay for his breakfast, and while the good Mrs. Smith was busy up stairs, priding herself upon her knowledge of tramps, the pale youth slipped into her bedroom to investigate her jewelry. She failed to wind up her watch that night, and her jewel box was empty. She was also emptied of her conceit, and feeds no more tramps.

The old heads in Hookertown think Mr. Spooner's doctrine is good enough for any day in the week. This sort of able-bodied pauperism is a crime against society, and is to be treated as such. The tramp will cease to travel as soon as he finds he must do it at his own expense. Private individuals and town authorities must shut their doors against him. He must be sent back to the city where he landed. If he comes a second time, he should be treated by law as a criminal. This will cure the evil and reduce our taxes.

Hookertown, Ct., } Yours to command,
Nov. 1st, 1877. } TIMOTHY BUNKER, Esq.

* * *

A RAT-GUARD.—To keep rats away from anything that is hung up, the following simple method may be used. Procure the bottoms of some old fruit cans, by melting the solder which holds them, upon a hot stove. Bore holes in the center of these discs, and string a few of them upon the cord, wire, or rope upon which the articles are hung. When a rat or mouse attempts to pass upon the rope by climbing over the tin discs, they turn and throw the animal upon the floor. This plan, shown in the illustration, will be found very effective.



GUARD AGAINST RATS.

* * *

Drain from a Cesspool.

The best method of disposing of the waste of the house is a matter of serious consideration with persons living in country places, or in small towns or villages, which are not provided with a complete system of public drains and sewers. This waste has a considerable value, if it can be used as a fertilizer upon grass, in the compost heap, or in the garden, and some manner of thus using it should be provided if possible. Generally, where cesspools are used to collect the waste from water-closets, bath-rooms, and wash-tubs, in houses provided with these conveniences, there are some matters which it is desirable to retain in the cesspool, as the liquid portion only is conveniently utilized. Sometimes cesspools are drained into rivers or smaller streams, and the overflow only is required to pass off. In this case it will be convenient to provide a screen for the outflow, to prevent objectionable matters from escaping. If this is provided, the cesspool may then be flushed out at every heavy rain, and to a very considerable extent cleansed or purified without permitting any disagreeable results, and the periods of thorough cleaning out postponed for several years. A screen that has been used for this purpose, is shown at figure 1. It consists of a piece of strong galvanized iron wire netting, with a mesh half an inch square, cut into the shape shown at figure 2. The drain-pipe is passed through the round hole in the center, which is cut to fit the pipe, and the netting is bent where shown by the dotted lines, around the shoulder of the pipe, in the form shown at figure 1, the flap at each end forming the ends of the screen. The joints are then secured by lacing with wire. It is impossible for this screen to be choked and rendered useless, for when the water rises to the lower part of the screen, there is no current against it to hold floating matter, and this rises until the current flows out at the mouth of the outlet. If the floating matter gathers here, the water escapes under it; if not the mass rises with the water until an opening is cleared below it. The inlet to the cesspool is shown on the opposite side of it. In a case in which such a screen as this was made, the top of the cesspool was covered with a flag-stone, and a round bed of soil was made over it and planted with hardy bulbs, by which the precise locality can always be ascertained.

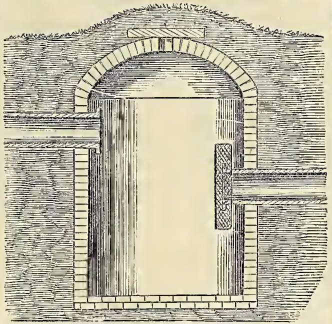


Fig. 1.—CESSPOOL WITH SCREEN.

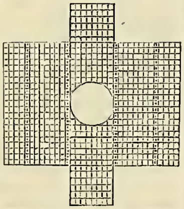


Fig. 2.—WIRE FOR SCREEN.

Waste Lands.—Make them Useful.

As one travels through the country, the most conspicuous sight, at least to a farmer, is the large proportion of land that adds nothing to the owner's income. Waste land abounds everywhere. It is fenced, and has the appearance of farm land, but the owner, if a farmer, would be better off without it than he is with it. No one locality seems to be better or worse than another in this respect, unless it be that the Southern States have the most waste land, and the Eastern States come next in this respect. There are rocky fields, and fields covered with loose stones; swamps and wet ground, and land covered with wretched brush and small timber, and in the South, especially, barren and gullied hill-sides. It is true, that to clear up these lands, and make them fruitful, will cost in labor, if the labor is valued at the current rates, more than the land would bring if offered for sale. But this is not the right way to look at this matter. In reality, it will cost nothing to clear these lands, because their owners may do it by working when they would otherwise be idle. The way to do it is to set about it. To clear an acre or two at a time, of those fields that can be cleared; and to plant with timber, of some valuable sort, that ground which is too rough for the plow, instead of permitting it to grow up with useless brush. In many cases, the worst trouble that farmers suffer is, that they have more land than they can care for, under their present system of management. Hundreds of farms are worked as grain farms, that are not well suited for any other use than dairy farms, and ground is plowed that should be kept in permanent grass. In some cases, the owners of land have discovered their proper vocation, as in the dairy districts of Central New York, in the fruit and grain farms of the western part of that State, in the pasture farms of the Blue-grass region of Kentucky, and in the corn-growing and pork-raising prairies of the West. If the system of culture in these places were changed, the farmers would be poor instead of being rich, and one sees very little waste land in these localities. There are districts where the surface is hilly, and not so well suited for arable purposes as for pasture, but where, instead of grass and cows, side-hill plows and poor corn fields, washed and gullied by rains, are to be seen. Here are waste lands in plenty; and their owners show every sign of poverty and want of thrift. It is not easy to change these circumstances quickly, but it is easy to begin—just as it is easier to start a stone rolling down a hill, than to throw it down bodily; and when it is once started, it goes slowly at first, and may need help, but it can soon take care of itself, and speedily reaches the bottom. It is just so with such improvements as are here referred to. They are necessarily begun slowly, but when one or two acres of these waste places are reclaimed, the product of these adds to the farmer's resources. He is richer than before by the increased value of these acres, and he is better able to reclaim more. When these in their turn are improved, the means for further improvements are greatly enlarged; the ambition of the man to excel in his vocation, is excited, and he speedily becomes a neater, better farmer, and necessarily his circumstances are improved. Thus the rough waste lands, which give a disagreeable appearance to the landscape, and are a stigma upon its character and that of our farmers, in the eyes of our own citizens, and of foreigners, might in a short time be improved and a source of profit.

* * *

EXPORT OF EGGS AND POULTRY.—Another new opening has been made for our surplus products; viz., the export to Europe of eggs and poultry. One steamer from Canada recently carried out 280 barrels of eggs, and our own steamers from New York, have already taken out many cases of dressed poultry. This trade will open up an outlet for much of our cheap western produce, and will doubtless greatly relieve our home markets, which are often depressed through superabundant supplies. England imports $13,000,000 worth of eggs from the Continent every year, and yet the market there is not fully supplied. A large portion of this business will now doubtless fall into our hands.

Underground and other Ice Houses.

At figure 1 we give an engraving, showing an ice house built partly underground. Where the soil is gravelly and porous, such a house will be very useful, and may be built more cheaply than one wholly above ground. The excavation may be made as deep as may be desirable, perhaps six or eight feet, will be sufficient. There must, however, be perfect freedom from surface water, or the house will be a failure. The bottom may be made of a layer of large stones, two feet deep; upon this smaller stones should be laid, to fill all the inequalities, and form a level surface, and there should be placed upon these a layer of coarse gravel. This may form the floor of the house. The walls, up to a foot above the surface, may be built of stone laid in mortar or cement, and the sill of the upper frame should be bedded in the stone-work and cement. The posts and studs, 10 inches wide, and 2 inches thick, should be framed into the sill, as in figure 2, *a* being the sill shown in section; *b*, the stud, and *c* the tenon at the foot of the stud, and the mortise in the sill. At figure 3 the manner of framing the corners is given, *a*, *a*, being the sills, and *b*, *b*, *b*, the studs. One stud is placed at the end of one sill, and another one inch from it, at the shoulder of the adjoining sill. Thus the outer boards may be nailed firmly at each corner, and a good joint also be made inside, by inserting the boards on one side between the two corner studs at *c*. This plan saves the cost of heavy corner posts, and gives equal firmness to the building. The corner can also be filled with sawdust, making it a poorer conductor of heat than a solid post. For convenience in taking out the ice, a ladder should be built against the inner wall. This is covered by the packing, when the house is filled, but as the ice is taken out, the ladder is exposed for use. The upper part may be finished as shown at figure 4, which represents an above-ground ice house. This is made exactly as the above-ground part of the house just described; a bank of earth should be raised around the base, and well sodded, so as to turn off the surface water, and keep the ground about the house dry. We here repeat, what we have often stated, the few simple, but essential, requisites for making a satisfactory ice house, viz.: first, perfect drainage, with perfect exclusion of air below; second, good ventilation above; third, ample non-conducting material around and above the ice; fourth, total exclusion of air and water from the ice, and fifth, solid packing of the ice, and the filling of the house in dry cold weather. If these rules are observed, it matters not of what the house is constructed.

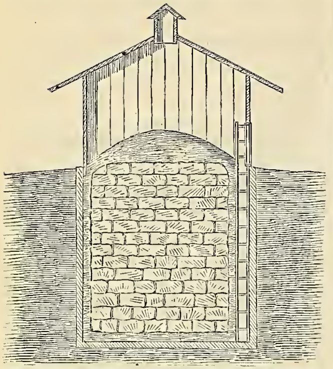


Fig. 1.—SECTION OF UNDERGROUND ICE HOUSE.

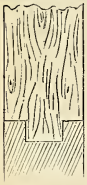


Fig. 2.—FRAMING.

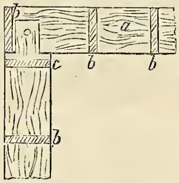


Fig. 3.—CORNER.

Plan of Corn-Crib and Granary.

"C. W. Y.," Lenawee Co., Mich., sends a plan of a combined granary and corn-crib, which is 32 feet long, 20 feet wide, and 10 feet high, from the stone foundation to the eaves of the roof, (see figure 1). It has a drive-way through the middle, 10 feet wide, and double doors at each end, by which ample ventilation may be secured in fine weather. The grain bins, 6 feet square, and five in number, are upon one side, and the corn-crib on the other.

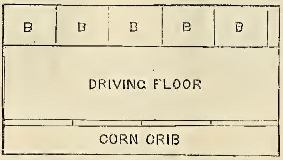


Fig. 2.—PLAN OF CRIB AND GRANARY.

A stair-way, 3 feet wide, leads to the floor above, where damp grain may be spread beneath the roof to dry, (see figure 2). The corn-crib is so arranged that the corn may be shoveled out at the bottom, by nailing cross-boards to the scantling, projecting 12 inches, and a board 10 inches wide is nailed to these, to make a long spout or trough, (figure 3).

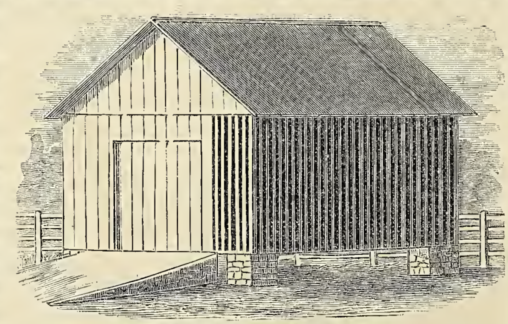


Fig. 1.—VIEW OF CORN-CRIB AND GRANARY.

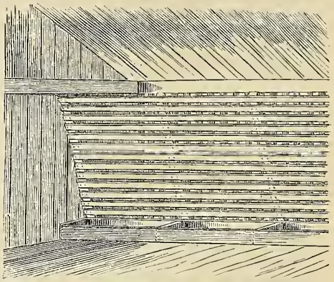


Fig. 3.—ARRANGEMENT OF BINS IN CRIB.

◆

NEW REGULATIONS FOR THE BARLEY TRADE.—The Grain Committee of the New York Produce Exchange have made new regulations for the grading of barley, of which those applying to American grain are as follows, viz.: No. 1 State barley, four-rowed, shall be of a bright natural color, plump, sound, and well cleaned, weighing not less than 48 pounds to the measured bushel. No. 2 State barley, four-rowed, shall be plump, sound, reasonably clean, but may be slightly stained. No. 3 State barley, four-rowed, shall be sound, reasonably clean, fit for malting, otherwise unfit for No. 2.—No. 1 State barley, two-rowed, shall be bright, natural color, plump, sound, and well cleaned. No. 2 State barley, two-rowed, shall be sound, reasonably clean, but in color not good enough for No. 1. No. 3 State barley, two-rowed, shall be sound and fit for malting, but in color and in cleanliness unfit for No. 2. Rejected barley shall be such as is for any reason unfit for No. 3.—No. 1 Western barley shall be plump, bright, sound, clean, and free from other grain, weighing not less than 48 pounds to the measured bushel. No. 2 Western shall be sound, bright, not plump enough for No. 1, reasonably clean, and free from other grain, weighing not less than 46 pounds to the measured bushel. No. 3 Western barley shall include shrunken or otherwise slightly damaged barley, weighing not less than 41 pounds to the measured bushel.—Rejected Western. All Western barley which is damp, musty, or from any cause is badly damaged or largely mixed with other grain, shall be graded Rejected Western.—These rules are now in force. Bright color, alone, distinguishes between No. 1 and No. 2, and as the color depends very much upon careful harvesting, it is important that this distinction be noted.

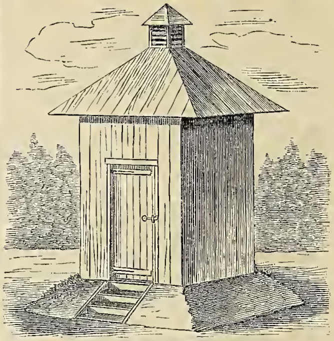


Fig. 4.—ICE HOUSE ABOVE GROUND.

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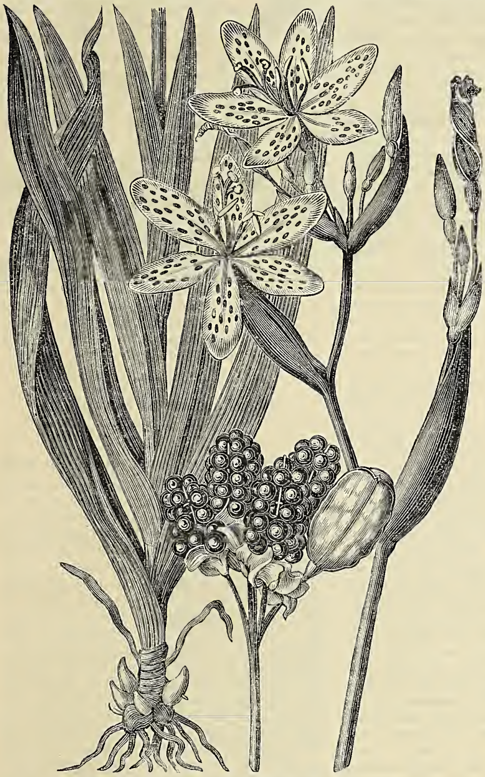
THE STOCK BUSINESS IN NEBRASKA.—The ranges on the North Platte River, in Nebraska, are now occupied by more than thirty owners of droves. We have a list of twenty-eight of these owners, with the size of each of their herds, from which we find that the herds number from 500 to 10,000, averaging about 3,000. The ranges have been located and occupied from one to five years; the business is proving profitable, and is consequently increasing. The capital required to carry on one of these cattle ranges, is about $40 per head of stock, which is sufficient to continue the business for five years, when profitable returns begin. At the end of this period, the herd will have increased more than four and a half times its original number, and the total cost for the five years will have been repaid in full, with a profit of 20 per cent over and above an annual charge of 7 per cent on the money invested, at the end of each year. Two of the owners in the list now before us, are tanners in New York, viz., Messrs. Keith and Barton, who own 8,000 head, and Messrs. Nichols Beach & Co., who own 5,000 head. All of these herds are in course of improvement by means of pure-bred bulls of the Shorthorn and other beef-producing breeds, and in a few years will supply the finest grade beeves for both home consumption and for shipment to foreign markets.

Good Old Plants—The Blackberry Lily.

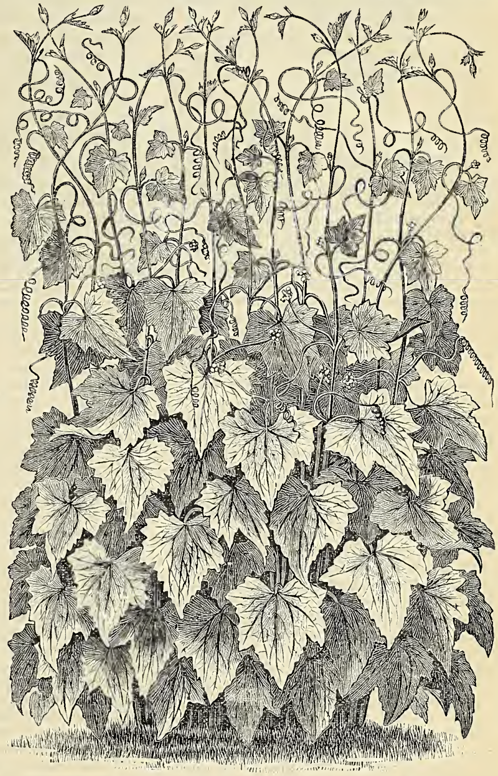
While the *American Agriculturist* is not behind others in presenting desirable novelties to its readers, it has for a long time given special attention to the good old plants, which have been pushed aside by others of no greater beauty, and whose chief claim lies in the fact that they are new. We never could understand flower fashions, and the whimsies of cultivators; it may be a fault in our mental make-up, but we have not a glimmer of sympathy with those who, in the grand profusion of roses, go about unhappy, because there is no blue one, or with those who, when nature has made a flower perfect, and given its finishing touch of exquisite gracefulness, go to work and try to torture or coax the plant to make a few more petals than nature thought proper, and then shout "a double!" "a double!" as wildly as that ancient screw-chap cried "Eureka!" With what success some of these doublers have worked, let the spoiled Lilies of the Valley, and the unmeaning monsters, called Double Lilies, bear witness. Not that we do not approve of double flowers at all—but there is reason in everything, and there are some flowers, naturally so perfect in themselves, that nothing can be added to, or taken from them, but an abortion results. But we did not set out to write on double flowers—though we would protest against that fashion which holds that, because some flowers are improved by doubling, *all* must be. Nor do we understand that fashion which discards a flower, because it is old. We may be all wrong, but the very fact that a plant *is* old—that poets have twined it into their verses, that it has been the favorite of many a lover of flowers who has gone before, that it was cherished by our grandmother, who brought the knowledge of it down from many generations, makes it more valuable to us, than any new comer can be, however exalted as to price, or many-syllabled as to name. Because it seemed like the return of an old friend, we were especially glad to become possessed, last spring, of a root of the old "Blackberry Lily." This, *Pardanthus Chinensis*, was brought from China considerably more than a century ago, and is now rarely seen, except in old gardens, but it is not any more to be got rid of by neglect, than the Chinaman is by abuse, for in a few of the older States it has in some places set itself down by the road-sides, and bides its time. Belonging to the Iris Family, the aspect of the plant is much like that of an Iris; the stem grows 3 or 4 feet high, branches at the top, where it bears regular flowers, of an orange color, and abundantly dotted with crimson or reddish-purple spots. One of its merits is its late flowering, being in bloom from mid-summer to September. But it has another merit; like those crackers from its native country, which the boys call "double-headers," it goes off twice. After the rather modest but pretty flowers have faded, the capsules go on and enlarge, and when quite ripe, the walls of the capsule break away and curl up, leaving a central column of shining, black-coated seeds, looking so much like a well-developed, ripe blackberry, that the fruit, if not so handsome as the flower, is quite as interesting, and shows that, in this instance, it does not require any effort of the imagination, to see the applicability of the common name. The name *Pardanthus* means "Leopard-flower," and it is sometimes called "pard-flower." In some of the older works it is placed in *Ixia*, and it is sometimes called *Moræa*, but the name given above is the one generally accepted. So far as we are aware, it is hardy in most of our Northern States, but the French writers say that it does not endure the winters of Paris without protection; they also state that it is frequently cultivated in pots, to decorate greenhouses and orangeries, a fact that may give those persons who follow the fashions, a better opinion of this very old—and we wish we could also say common—plant.



THE BLACKBERRY LILY.—(*Pardanthus Chinensis.*)

Quick-Growing Climbers.—Pilogyne.

There is seldom much to interest one in the suburbs of large cities, which are generally bordered by a fringe of buildings, the character of which plainly indicates the poverty of their inmates. Yet, as we are whirled through the outskirts of Jersey City, on our way from the country to the office, there is one building we usually try to get a look at. It is but a one-story shanty—and no better "architecturally," than its many shanty neighbors, but it is made an object of beauty by its vines. There are vines at the right and left of the door, and around the windows; vines clamber up to the low roof, and pour over, as it were, at the eaves. Indeed, the attractiveness of the house consists in the fact that one can hardly see it for the vines—like that town the boy could not see on account of the many houses. The house is poorer than the humblest make-shift of the new settler—yet it is made attractive by the abundance of Madeira Vines. In a visit to Rochester, N. Y., in September last, we visited the new house and grounds of W. C. Barry, Esq. The house has many claims to beauty, and we might be able to describe its architecture, had not our attention been diverted by the abundant climbers, which ran up to the windows, hung about the pillars, and pilasters of the portico, and everywhere added to the beauty of the dwelling. These two extremes, the vine-clad suburban shanty, and the vine-clad suburban villa, were striking illustrations of what the *American Agriculturist* has so often insisted upon—the utility of climbers in



A QUICK-GROWING CLIMBER.—(*Pilogyne suavis.*)

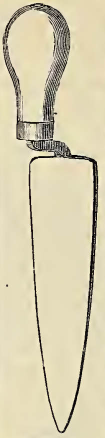
our climate, and that they may be introduced with propriety to decorate our dwellings, however humble or costly they may be. We have often seen a western log-cabin, simply by the aid of a common hop-vine, looking more home-like, more as if real refinement dwelt under its roof, than the costly mansion of some newly rich, whose idea of architecture is to have large wooden pillars, and plenty of them, the bright white paint upon which must not be soiled by vines and creepers. The merits of the hardy woody climbers have often been discussed in these columns, and these are in many cases to be preferred to the herbaceous vines, that die down to the root each fall, or those that must be renewed altogether from seeds or cuttings each season. Still these annual vines are very useful, to produce an effect in a very short time; they may be used with advantage until the slower growing woody ones get established; they are often more tractable than others, especially if one needs a mass of foliage near the ground; for these uses, and for temporarily covering a surface rapidly, they answer a better purpose than the more permanent vines. We are more than ever inclined to advise our readers to decorate their houses with climbers. Not one of them has a dwelling with an exterior so perfect, that these can not add to its beauty, and we are quite sure that many, like ourselves, have come into possession of the "ginger-bread work" of some country carpenter, which they would gladly hide by a charitable drapery of foliage. Among the vines used by Mr. Barry, was one that we had not before seen in the open air, though we had grown it as a greenhouse climber; it had assumed, when placed in the open air, such a vigor, that we did not recognize it at first. The plant is cultivated in Europe as *Pilogyne suavis;* as that name is already in the catalogues, and botanists are not altogether in accord as to this and relative genera, we will accept this as a handy garden name. It belongs to the Gourd Family, and in the same division with the Balsam Apple (*Momordica*), which in some respects it resembles. The staminate and pistillate flowers are in separate plants, and as only the male plant has thus far been introduced, it can only be propagated from cuttings, and a stock must be kept over winter in a greenhouse. The delicacy of the young growth makes it useful for covering pillars, etc., in greenhouses and conservatories, but when planted out, the leaves become much larger, of a fine dark green, and overlap one another in such a manner, as to make a complete sheet of foliage, above which the slender young shoots push forth, to find a hold for the delicate tendrils, and when once made fast, they in turn add to the curtain of dense verdure. The engraving gives the shape of the leaves, and general appearance of the plant. Those who have Ellwanger & Barry's catalogue of Greenhouse and Bedding Plants, will find there an engraving that shows its appearance as a pot plant.

Keeping Celery in Winter.

Though in former volumes Mr. Henderson has plainly told the whole story about celery, yet the access of new readers, and also the increase in numbers of celery growers, bring to us numerous letters concerning it. These we have in part answered in the "Notes about Work," under "Kitchen and Market Garden," but we have several correspondents asking about the keeping of celery in winter; these should have made their inquiries a month before, as it is not possible to answer those made in November earlier than December—a time when, for the majority, any instructions will come too late. However, we will explain the conditions and methods of keeping celery, as they may be useful to those in mild climates, who have not yet put up their supplies for the winter, and they may be useful in enabling those who have already put away their plants, to modify their method if need be. Celery during the winter should be kept from hard freezing on the one hand, and on the other from any warmth that will induce growth. If put in a warm place, the center will grow at the expense of the outer stalks, which will soon become exhausted, hollow, and useless. The same trouble will occur if the celery is stored in a cool place in too large masses. Being quite dormant, it will, like so much dead vegetable matter, if there is a large quantity together, ferment and decay. Another important matter is the exclusion of light. If put up quite green, and no light reaches it, celery will, in a few weeks, become blanched and tender. To recapitulate: the celery must be kept cool, but not freeze; must not be in so large masses as to heat, and must be kept perfectly dark. The method followed by market gardeners around New York, meets these requirements. A trench is dug 10 or 12 inches wide, 10 inches being better than wider, as deep as the plants are tall. Of course a place must be chosen where there will be no trouble from water entering the trenches, and provision made for surface drainage. When there is danger of actual freezing—moderate frosts do not hurt the celery—the plants are taken up, with what earth may adhere to the roots, and set upright as close together as possible in the trenches. Some litter, such as straw, marsh hay, or leaves, is thrown over, a little at first, but as the weather becomes cold, the covering is increased, until finally it is at least a foot thick. In putting away celery in trenches, we have modified this plan somewhat; we have made the trenches so deep that the tops of the plants were quite below the level, then put strips of board across here and there, as needed, and on these are laid short boards, old box covers, or any spare short stuff. Later, leaves, or straw, are put over these. This greatly facilitates getting at the celery in winter; the boards that cover the trench being in short pieces, it is handier than if they were of full length. Still, in heavy snows, or what is worse, the trenches are covered with snow that has been rained upon and frozen, it is sometimes difficult to get at the celery, and those who have a cool cellar will do well to adopt, for a share of their crop at least, Mr. Henderson's plan of putting it away in boxes. Rough boxes are made about 9 inches wide, as long as may be convenient, with sides a little less in hight than the celery. These have an inch or two of sand or sandy soil placed in them, and the celery stacked in closely the same as in the trenches. If the main crop is put away in trenches outside, it will be convenient to have one or more boxes of this kind in the cellar, from which to take what is needed for the table, as one is then independent of the weather, and in a favorable time the boxes may be replenished from the trenches. If the cellar has a ground floor, trenches may be made by the use of planks or boards, these being held up by stakes driven into the ground. One section of 9 inches being put up and filled, a space of the same width is left, and then another section 9 inches wide, of boards held up by stakes, is filled with the plants, and so on. Of course this method is impracticable in a cellar heated by a furnace, and can only be adopted where the place can be kept but little above the freezing point. Those who have no suitable cellar, can no doubt keep a box of the kind described in a barn, if covered with sufficient hay or litter to prevent freezing. There is another method of preserving small quantities, that some may find useful. A bottomless barrel is sunk in the earth in a convenient place, leaving about one-fourth above the surface. The celery is packed closely into this, a cover put on, and in cold weather some litter thrown over it. Whatever method will comply with the essential conditions above named, will keep celery through the winter satisfactorily.

A Useful Garden Implement.

Recently in looking through the grounds of Woolson & Co., Passaic, N. J., we noticed that the men at work in taking up and resetting hardy perennial plants, were using an implement that seemed very effective for the purpose. Upon examination we found this to be something like a cross between a trowel and a dibber, and capable of doing the work of either. We learned from Woolson & Co. that they came across it in use by Hoopes Brother & Thomas, Westchester, Pa., with whom they suppose it originated. Thinking that many of our gardening readers would find such a tool very useful, we made a sketch of it, which is here given, much reduced. The whole length is 16 inches; that of the blade 10 inches. The blade is 2½ inches wide above, and tapers gradually to the point; it is ⅛-inch thick in the center of the upper part, and beveled to the edges; a very strong shank or tang passes through the handle, and is headed down at the end over a bur; the handle is large and quite fills the hand. It will be seen that this is no implement for fancy gardening, for it weighs almost a pound and a half, and being strong in every part, it means work, and in certain kinds of work it will accomplish a great deal. Messrs. Hoopes Brother & Thomas say it is more useful in setting out root grafts than the common dibble, and Woolson & Co. find it more effective than a trowel, and use it for much of their work that would ordinarily require a spade. This tool, so far as we know, is not yet for sale by the trade, but may be readily made by a blacksmith from the dimensions here given.


TROWEL.

Tree Planting at the Capital.

BY PETER HENDERSON.

Practical Suggestions for Setting out Trees.

I know of no city that has such an extent of wide and finely graded streets and avenues, as the city of Washington. The streets, radiate from the Capitol as a center, all the leading avenues being 160 feet in width, and some of them, such as Pennsylvania avenue, being upwards of 4 miles in length. The most striking feature of the city is the extent, variety, and beauty of its street trees. Some five years ago there was appointed what is known as the "Parking Commission," consisting of Wm. Saunders, Supt. of Gardens at the Department of Agriculture, Wm. Smith, Supt. Botanic Gardens, and John Saul, Nurseryman, all of Washington. The selection of these gentlemen showed excellent judgment on the part of the authorities, all being men of ripe experience in horticulture, and whose combined knowledge, working as a committee, has even now produced results in tree planting that probably no other city can equal. Already 40,000 trees have been planted on the avenues, and yet their work is not half completed. Some 30 kinds are used, but the bulk of planting will be confined to not more than 10 leading kinds. The trees most largely planted, are named in the order in which they are valued by the Commission. First is the Silver or White Maple (*Acer dasycarpum*), then American Linden (*Tilia Americana*), American Elm (*Ulmus Americana*), Scarlet Maple (*Acer rubrum*), Box Elder (*Negundo aceroides*), Sugar Maple (*Acer saccharinum*), American White Ash (*Fraxinus Americana*), English Sycamore (*Acer Pseudo-Platanus*), Button Ball (*Platanus occidentalis*), Tulip Tree (*Liriodendron Tulipifera*), Honey Locust (*Gleditschia triacanthos*), and Norway Maple (*Acer platanoides*). These, and some 20 other kinds in smaller numbers, are set from 20 to 25 feet apart, and there are miles and miles of streets, in which not a dead tree, or one diseased, can be seen, showing that the *planting* must have been done in the best possible manner. To tell how this has been done with such unparalleled success, is the object of this article. To begin with, the trees must have been regularly transplanted, in order to have an abundance of fibrous roots, a condition necessary to success. No matter how fine trees may be got from their native woods, unless planted in nursery rows for one year, many will fail if set out in the open street. Even when the Commissioners have purchased trees from distant nurseries, unless their roots were satisfactory, they have planted them out in their own grounds for one season, before risking them in the streets.

Wherever the trees may be taken from, every precaution is used to prevent the roots from exposure. Several wagons have been built in such a manner that the trees can stand upright, without being jammed either in tops or roots, the roots being protected with wet bagging, to prevent drying. The trees, when planted, average an inch and a half in diameter, and 12 feet in hight. The hole for the roots is dug about five feet across, and two feet deep. When the natural soil is unsuitable, this is filled with good soil brought from elsewhere. Every tree when planted is surrounded by a substantial, but plain, slatted tree box, 6 feet high ; this serves the double purpose of protecting the tree from injury by cattle and otherwise, and of *shading the stem from the sun.* This shading is all important. When trees are growing in masses, either in the forest or in the nursery, they shade one another, and it must be evident that, if set out without any protection from the blazing sun, they must suffer. Many thousands of deciduous trees (both fruit and ornamental), perish annually, the first year of planting, from this cause. When taken from the closely planted nursery rows, and exposed to the full sun and air, the change is too great, and, unless the season is especially favorable, however careful the planting, large losses must ensue, unless the stems are shaded. Trees in orchards and other enclosures, may be most cheaply shaded by wrapping the stem up to the lower branches, with straw or hay ropes, or anything that will shade the trunk from the sun; but for trees in streets or elsewhere exposed to injury, the slatted tree box is the best method of shading. The grand success in planting the avenues at Washington, is no doubt largely due to the persistent use of this precaution, for it is never omitted, and the results attest its value. The average cost of each tree, with its box, is $2.25, one-fifth of which is paid by the property owner, and the balance by the city. This is less than half what it would be, if the planting was done by the owners ; it now costs them a mere trifle, and is done uniformly and thoroughly, and gives the city an appearance that, before another decade passes, will be the wonder of every visitor. Already you may ride five miles "under the Linden," and when the work is completed, one may drive for 200 miles through the broad and amply shaded avenues of the Capital, as these trees will convert the whole city into one great park. The planting was begun in 1872, and will in all probability be completed in ten years from date of starting, producing a result of which every American may be justly proud.

Mr. William Saunders is preparing a pamphlet giving full details of planting, pruning, and general management of city trees, which will embody the experience acquired in the five years of extensive practice in planting the streets of Washington City.

The Sweet Potato "Early Peabody."

This new sweet potato was first brought to notice by the *American Agriculturist* last spring. With regard to new plants of all kinds, an editor is placed in an unpleasant position. If he brings a new thing to the notice of his readers, and it turns out to be a disappointment, he is blamed. If, in the exercise of caution, he waits until the plant is more thoroughly tested, he is, should it turn out to be valuable, blamed for not being up with the times, and for withholding that which his readers should have known. Our course, in such matters, has been to give the statement of the one who originates or brings out the plant, and our readers, having all the information we possess, and knowing its source, can judge for themselves whether they should make a trial or not. Of course there are a few who think that we recommend everything we notice, and if we describe a particular fig, and they fail with it in Canada or Minnesota, are ready to blame us for the publication. Mr. Peabody's claim for his new sweet potato was, that it was to other varieties of sweet potato, what the Early Rose was to other potatoes. Indeed, so strongly was he impressed with this that he proposed to call it "Early Rose," but yielded to our suggestion that the name, being already applied to something else, would lead to confusion, and accepted our proposition to name the variety the "Early Peabody." Any who are disposed to accuse Mr. Peabody of vanity in giving his name to the variety, are informed that he had nothing to do with naming it. That Mr. P. accompanied his description with a liberal sample of seed potatoes, was evidence that he felt confidence in the variety. We started the potatoes in a hot-bed, and treated the slips, or plants, as we have heretofore treated others. The season was unusually wet with us, and the vines grew luxuriantly. With the ordinary sweet potatoes, we think it fortunate if we can steal a few from the rows two or three weeks before the vines are stopped by the frost, when the whole must be dug. We had potatoes abundantly large for the table by August 10th, but we did not have them *on* the table, as they were not fit to eat. So abundant had been the rains, that while the vines gave us a plenty of potatoes, they forgot all about the *sweet*, and they were simply useless, as probably any other variety would have been under the same conditions. After this trial we let the crop alone until frost, in early October, when it was dug. There were three rows across the garden, each 180 feet long, and they gave, without any unusual culture, 9 barrels of Early Peabody. And such potatoes for size! Three of them, selected of course, weighed 12 pounds. We are now having them on the table, and while they are not quite so sweet as those brought from Virginia and Delaware, they are sweet enough to suit the writer's taste, and of a most excellent flavor and texture. Our land is very light, and suffered so much from drouth in previous seasons, and especially the last, that a steam pump was put in to enable us to water the garden from the river, but so unlike to the average seasons was that just past, that we have not needed to apply a gallon of water, the rains giving us more than enough. From our experience, under these conditions, we have no doubt that, in an ordinarily dry summer, the Early Peabody will not only prove early, but good and productive, and it is especially valuable because, on account of its early maturing, it will allow the cultivation of the sweet potato in localities much further north than has heretofore been possible. From our experience this season, adverse as it was in some respects, we feel that we speak within bounds when we say that the Early Peabody will prove to be at least a month earlier than any other variety—and we have cultivated all that are grown in the Northern States.

The "Wire Worm" and "White Grub."

BY PETER HENDERSON.

In the *American Agriculturist* some months ago, a correspondent from Montreal credits the "Wire Worm," or *Iulus*, with the destruction of his Carnation plants. Our experience in this matter leads us to believe that the "Wire Worms" are seen only as a consequence of the death and decay of these, and are not the cause. They merely feed on the decaying vegetable matter of the Carnation, as they do on many other plants in the process of decay. We often, of late years, have Carnations die off by thousands, when the closest examination reveals no "Wire Worm" or other visible cause of death ; this is particularly the case when the plants die off in the greenhouse. It is only in the open garden that I have observed the "Wire Worm" on the decayed stems of the Carnation—never, so far, on the plants that had died inside. The "White Grub," or "Grub Worm," is very different in appearance, varying from an inch to an inch and a half in length, and from ½ to ¾ inches in circumference ; the color of the body is of yellowish white, the head blackish brown. This pest is destructive to many kinds of nursery stock, and is particularly fond of cutting off the roots of Roses, and other woody roots of like character. I remember that the late David Buchanan, Nurseryman, of Elizabeth, N. J., one season employed several men for weeks in killing these grubs by hand; they were destroying his Quince stock with great rapidity. The indication of their presence was the drooping of the leaves of the plants attacked by them. So far, I know of no other method of destroying them. The "Wire Worm," as you describe it in the January number, and as I understand it to be, I have always considered harmless.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

Moving.

O dear!—For you see I am in the moving business now—neither here nor there, but waiting for a day or two with friends, while the household goods go on and get into the new house. Who knows whether it is "a move in the right direction," when the familiar objects are torn away from their accustomed places and shipped for the new home? A person who has moved many times should know by experience that no great change for the better, in *all* respects, is to be expected. There is no great loss without some small gain, and no great gain without some loss. For my part, I no longer expect, for myself or others, anything except a change and variety of frying-pans, so to speak. But then *home*, in the best sense of the word, can exist even in a frying-pan (metaphorically speaking). It must be a great loss, indeed, which can counterbalance the great gain of a re-united family after many months of separation. To have ample time for preparation, makes the labor of moving more easy. One can then get the rubbish, which is too useful to be left behind, into some reasonable shape. For instance, carpet-rags. How they do accumulate! But there is a great deal of wastage about them, and they occupy unnecessary space if packed without being at least cut for sewing. We had just got well into the business at our house. In other words, the dear grandmother had settled herself to the task, helped sometimes by the little girls, when the call for a removal suddenly came. Who knew before that there were so many old garments only fit for carpet-rags? How we wished that we had known about moving before, so that the carpet might have been finished first! And then the old papers! We quite agree with Emerson (or was it Thoreau?) that "the old is as good as the new," but I am tired of carting about

Old Newspapers.

I like to look over old files of one sure to have some good things in it. But semi-weekly papers do accumulate so fast. I think we had better scatter the old ones among neighbors who have a lack of reading. I see them eyed wistfully by one who has had a chance to read but few of them, and who says they will at least pay for their freight, sold as old papers after they have been looked through and gleaned of things valuable. So in they go. But before we move again, I hope we shall cut out whatever we wish to save in the old papers, and so be able to move from place to place (if such is to be our lot) lighter-weighted. It is a standing mystery to a friend who has twice helped in our moving, what it is that makes our loads so large and heavy, for when he visits us he sees only a little plain "furniture," and no one supposes us to be burdened with too expensive wardrobes. But books and papers weigh, and old rags make bulk.

When the word comes to "move on," a housekeeper would like time to sort over things, but if she must also go to work to get the children ready for the journey, the hands which do most of the packing will probably put in many things hardly worth carrying. The children enjoy the general confusion, but the house-keeper shudders as she sees them in the dust, and considers what a large washing will be the first one in the new house. But there is a huge cistern of rain-water in prospect, and in that fact is consolation. Perhaps at last we shall have plenty of water handy for use.

Meanwhile, with the youngest children, we avail ourselves of the hospitality of good friends, until there has been opportunity for the cooking stove and a few beds to get ready for use in the new home. Here we set some necessary stitches in needed garments, and plan ways and means with those who know all about it. Here we send out postal cards to correspondents, notifying them of the last change of address. Here we toss uneasily on our pillow at night—when we think of the house we have left so far from the point of cleanliness. What if the woman who expected to live in it after us, and who kindly came to beg us not to do the least thing toward cleaning—what if she should not live in it after all! No good house-keeper would willingly leave a house uncleaned. She would not like any one coming after her to suppose that she had tolerated such a state of things. Having some weeks of warning, she would gradually remove from the walls and windows and floors such traces as she could of the ravages of flies and children's fingers.

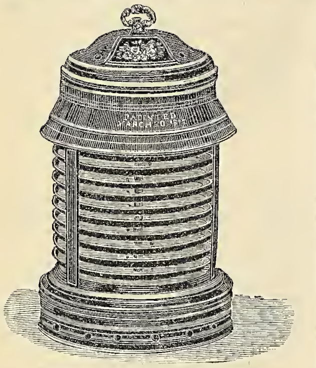


Fig. 1.—EVAPORATOR FOR A STOVE.

In the New Home.

There is certainly some gain in our moving. Let us not try to discover any loss. But that cistern! Mischievous boys in the neighborhood, out of simple mischief, had broken into the house while it was unoccupied, and turning on the water in the basement kitchen, had let all the water higher than the kitchen faucet, probably nine-tenths of the whole, run away, not only wasting the water, but soaking the kitchen floor so as to render it uninhabitable for some days. However, it is raining day and night now.

If it isn't one thing, it is another. Yes, it is another. Shall I tell what other? I don't quite know myself. But I had a strong suspicion of the fellow's name when I found him under a basket of soiled clothes, and when I discovered his brother hastening to hide himself, as I took up a dish of chicken-feed, which had stood on an entry floor all night, I captured him and took him in an empty wash-dish to the Unabridged Illustrated Dictionary. C-o-c—cockroach! There, sure enough, was his picture. Well, the days of peace have not arrived yet, and I am glad I was not so verdant as to have expected them right along, because some desires of my heart were gratified. Here then is a new study of insects, about which "more anon."

Rags for Rugs.

Speaking of carpet-rags, of course I mean rug-rags too. For I have it in my plan to make three or four rugs as soon as I can get around to it. Some of the Nova-Scotia neighbors, among whom I lately lived, make all their carpet rags into rugs, cover a whole large floor with them, usually drawing their rags into strong canvas, with a hook made for the purpose. Some of them are very nice, as most of my readers know. But a braided rug seems an easier thing to manage, and I believe I like that kind for every day use as well as any I have seen. I saw one the other day which a grandmamma made when she first began to keep house, and which had been in use more than a score of years. I saw also one that her daughter had begun to make, which might do equal service. The rags were good, evenly cut, pieced together neatly, and braided so as to conceal all raw edges. The strands were rolled as they were braided, so as to keep all raw edges out of sight, making a thick, round, firm braid. An oval piece (or a parallelogram with rounded corners) of Brussels carpeting, (to be got at carriage shops), or other firm nice carpet or cloth, makes a pretty center to the rug. Line this with thick cloth. If the lining is glued to the piece of carpet, it makes all more firm. Bind it with strong braid, and sew the braided rags around this piece. The center may be of any size you like, from 6 to 20 inches long, but the whole rug looks better when such a center piece is used, instead of beginning at the center with the braid. Strong carpet thread should be used for sewing.

Pieced Rugs are pretty too, and very useful in some rooms. Good thick cloth may be cut in strips, squares, or diamonds, and laid in some simple pattern, using two or more colors. When these have been sewed together according to the pattern, and pressed, making a rug of whatever size you please, line the whole with some strong material, and tack it together in an ornamental fashion. Sew on small fancy rosettes, cut from cloth that harmonizes with the whole, or make your tufts where the tacking together is done. A scalloped border, made with a pinking iron or without it, may be added. This is a good use for old thick coats.

Saving Work.

An acquaintance, who manages to do the work for a family of six, and to get, besides, some time for reading and society, tells me some of her ways, which I mean to put in practice more or less. All of the family wear flannel next the skin in winter, and this washes more easily than cotton cloth, needing no rubbing when washed with a machine and good suds. The outer garments in winter are mostly made of worsted or woolen material, and so are sponged off when soiled, without the labor of washing and ironing. She reasons that if her boys can be decent in dark cloth garments, seldom washed all over, her girls, with neater habits, can do the same. So she puts a colored worsted or plaid flannel polonaise on each girl, instead of an apron, protecting it, when dishes are washed or wiped, with a sleeved calico apron, and at table with napkin or bib.

No doubt it would be the perfection of neatness to wear freshly-laundered garments, outside and in, every day, but she has counted the cost and cannot afford it. With weekly changes of under flannel, frequent baths, pure air, and wholesome food and drink, she hopes to maintain the family health without much expenditure of strength in washing and ironing outer garments. With the same end in view, she carpets all of the rooms except the kitchen, and lays strips of rag carpet and rugs over parts of the kitchen. The flannel under-garments, being wrung with a wringer, are considered ready for use when clean, dry, and well aired, without ironing. Night-gowns being made of flannel, or of soft unbleached cloth, are folded and put away dry, without ironing. Dish towels are treated in the same way. No ruffled garments are allowed in the washing, and no time is spent at the sewing machine in making ruffles or knife-plaiting. Seldom is any time spent in making cake or pie, some form of fruit usually satisfying all demands in the way of dainties or delicacies. The most common desert at her table, one satisfactory to each member, is a single good raw apple after the body of the meal.

Being Too Particular.

My acquaintance seems to me a very sensible woman, but while I report her ideas and practices, I am reminded of an article I saw in the household columns of a weekly paper, last summer, entitled "Too Particular." The author, an elderly lady of much household wisdom, believes that it is hardly possible for a house-keeper to be too particular about her work, and she advises young house-keepers to lay down on the start, certain rules to guide them in their duties, such as "Never put off until to-morrow what can be done today." "Whatever is worth doing, is worth doing well." "Never look at scarlet geraniums through smoky windows."

All rules must be used with judgment, and with a certain breadth of wisdom. It will never do to defer till the to-morrow which never comes, the reading of your paper or magazine, in order to conscientiously search out and clean away every speck of dust in the crevices of the room, nor to let extra nice house-keeping prevent your daily effort to "do well" the patient training of your children. If the house-keeper is also a wife and mother, she has a great variety of duties, and must not make her family unhappy by either over-zeal or neglect.

Let us Moisten the Air we Breathe.

Those who live in the modern house, in which close-fitting windows are made still closer by "weather-strips" of rubber, and where the heating is by hot-air from a furnace or by coal-stoves, have become gradually accustomed to the atmosphere; but when one whose house is heated by open grates and fire-places, visits one of these modern houses, a sense of discomfort, of being ill at ease, is at once felt, and he or she, if the cause is ascertained, feels quite willing to bear with the inconvenience of open fires for the sake of the more pleasant and healthful atmosphere they bring. If one enters a greenhouse in winter, the exclamation usually is, "How warm and summer-like."—The warmth is perhaps not greater than that of the person's own rooms at home, and the "summer-like" impression is not due to the greater heat, but to the moisture in the air of the greenhouse, a condition necessary to the proper growth of plants. If one would see how unlike the air of a greenhouse is to that of an ordinary room, just take a plant from one to the other, keeping the room at the usual temperature of the greenhouse. In a week or less, the plant will present a sorry appearance, showing that, however it may be for human life, the atmosphere of our dwellings is not generally suited to plant life. That the air of our houses should be as highly charged with moisture as that of a greenhouse unavoidably will be, we do not claim, but that it is generally too dry in our dwellings, the warped furniture, the cracks in the doors and wood-work, and the open joints in picture frames, are abundant evidence, even if we do not heed the dryness of the hair, the harshness of the skin, and the unpleasant feeling of the throat, so common—at least with sensitive persons—in winter. The necessity for a moist atmosphere is admitted by the stove-makers, as upon nearly all stoves for heating purposes only, there is some receptacle to hold water to be evaporated, and these are generally excellent illustrations of "how not to do it." If we wished to keep water upon a stove, and prevent it from evaporating as much as possible, we should have the vessel stand upon some support that would conduct but little heat, and partly cover it. Most of the stoves have just this contrivance—an urn or

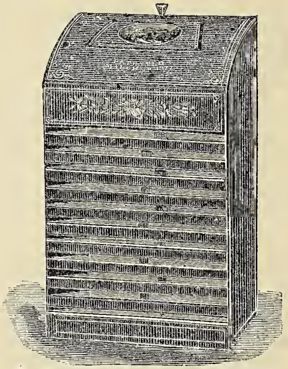
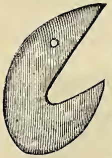


Fig. 2.—EVAPORATOR FOR A REGISTER.

vase, with a narrow base, or foot, which conveys very little heat to it from the stove, and the vase is often provided with an open-work cover, which greatly retards the evaporation. One of these jimcracks will hardly evaporate a pint of water in 24 hours. Throw this thing aside, and put upon the top of the stove a good broad pan, and a gallon or more of water will disappear in the same time, to the great improvement of the air of the room. Feeling that not only as a matter of comfort, but of health this matter of the moisture of the air we breathe—with invalids it is breathed constantly, with but little change—is of more importance than it is generally regarded, we are glad to see an attempt to remedy the difficulty. We have had at our office for some time an "Evaporator and Air Moistener," invented by Mr. I. W. Parmenter, of New York. It is made in several patterns for different uses. That for a stove is shown in figure 1, and unlike the ordinary evaporator or vase of the stove-makers, it is constructed upon the principle of evaporating the greatest practicable amount of water, which is accomplished by exposing a wide extent of surface. There is a reservoir of water at the top of the apparatus, and below a series of shallow pans, so arranged that by lifting a valve, these will be filled. It will be seen that there are several square feet of water surface exposed, and as the apparatus is so arranged that the heated air will play over the surface, evaporation will go on rapidly. Another style is shown in figure 2, which may be suspended against a hot-air register in the wall, and others are made to be placed in the hot-air conductor in the cellar, near the furnace, and others still for use with steam pipes. In houses supplied with water, the apparatus may be arranged to connect with the water pipes, and the trouble of filling the reservoir avoided.

A Catch to hold a Door.—This little contrivance may be used either for the kitchen or any other door that is desired to keep open. It is self-operating, and catches and holds the door when swung back against it, until it is released by moving the catch with the foot. It is made of a piece of hard wood cut into the shape shown in the engraving, with a hole as there indicated. It is fastened to the floor by means of a screw through this hole, and upon which it works as a pivot. When it is placed properly, it works very effectively. It will be found very useful in barns, stables, and other places, as well as about the house.



CATCH.

"Fifteen Cent Dinners."

Miss Juliet Corson has a Cooking School in New York, where those who wish can be instructed in the art of preparing food. Besides this, she is doing a most excellent missionary work, in publishing a little pamphlet entitled, "Fifteen Cent Dinners for Families of Six." All persons are cautioned not to pay for the book, as the first edition of 50,000 copies is intended for free circulation among the families of working men earning $1.50, or less, per day. We have looked through this little work, and find it eminently sensible. There is no doubt that by following its directions a family consisting of father, mother, and four children, can live, and live well, with three meals a day, including one meat dinner, at an average cost of 36 cents a day. This does not provide for tea or coffee, but allows cocoa twice a week, but uses broth and milk as substitutes, and also supposes that the broth from the meat of one day's dinner is to be used for the following breakfast. The recipes, while they might not suit the fastidious, call for good, wholesome and nutritious food. The fact that a variety is always acceptable is kept in mind, and especial attention is properly given to seasoning, of which a greater variety, though not expensive, is provided than is to be found in the kitchens of those who do not feel obliged to count the cost of everything. We shall probably refer to this little work again, and now give (with few omissions) the author's hints on seasoning food as they will prove useful to our readers generally.

Seasoning Food.—Many people have the idea that a finely flavored dish must cost a great deal; that is a mistake; if you have untainted meat, or sound vegetables, or even Indian meal, to begin with, you can make it delicious with proper seasoning. One reason why French cooking is so much nicer than any other is that it is seasoned with a great variety of herbs and spices; these cost very little; if you would buy a few cents' worth at a time you would soon have a good assortment. The best kinds are Sage, Thyme, Sweet Marjoram, Tarragon, Mint, Sweet Basil, Parsley, Bay-leaves, Cloves, Mace, Celery-seed, and Onions. If you will plant the seed of any of the seven first mentioned [Tarragon seed is very rare, but the roots can be bought.—Ed.] in little boxes on your window sill, or in a sunny spot in the yard, you can generally raise all you need. Gather and dry them as follows: parsley and tarragon, should be dried in June and July, just before flowering; mint in June and July; thyme, marjoram and savory in July and August; basil and sage in August and September; all herbs should be gathered in the sun-shine, and dried by artificial heat; keep them in air-tight tin cans, or in tightly corked glass bottles.

Dried Celery and Parsley.—Wash the leaves, stalks, roots, and trimmings of celery, and put them in a cool oven to dry; then grate the root, and rub the leaves and stalks through a sieve, and put all into a tightly corked bottle, or tin can with close cover; this makes a most delicious seasoning for soups, stews, and stuffing. When you use parsley, save every bit of leaf, stalk, or root, you do not need, and treat them in the same way as the celery. With parsley the root has even a stronger flavor than the leaves, and do not waste a bit.

Dried Herbs.—When you buy a bunch of dried herbs, rub the leaves through a sieve, and bottle them tightly until you need them; tie the stalks together and save them until you want to make what the French call a *bouquet*, for a soup or stew. A *bouquet* of herbs is made by tying together a few sprigs of parsley, thyme, and two bay-leaves. The bay-leaves, which have the flavor of laurel, can be bought at any German grocery, or drug-store, enough to last for a long time for five cents.

Celery Salt.—If you mix celery root, which has been dried and grated as above, with one-fourth its quality of salt, it makes a nice seasoning and keeps a long time.

Spice Salt. — You can make this very nicely by drying, powdering and mixing by repeated siftings the following ingredients: one quarter of an ounce each of powdered thyme, bay-leaf, and pepper; one eighth of an ounce each of marjoram and cayenne pepper; one half of an ounce each of powdered clove and nutmeg; to every four ounces of this powder add one ounce of salt, and keep the mixture in an air-tight vessel. One ounce of it added to three pounds of stuffing, or forcemeat of any kind, makes a delicious seasoning.

To Freshen Oiled Furniture.—A lady sewing-machine agent tells us that the black-walnut tables of their machines are kept nice by rubbing them with a cloth moistened with kerosene oil. Try it on your cabinet organ, or on any other piece of oiled furniture, and you will quickly see an improvement. But keep it off from varnish.

BOYS & GIRLS' COLUMNS.

Now for the Good Things, Boys!

The Editors don't have time to look after business letters much, but the Publishers or their clerks often show us pleasant letters, and while they exhibit a satisfaction in holding up a long sheet, having on it 20 to 100 or more names of subscribers, sent by one man, we notice an expression of genuine pleasure, when they show us a letter like this:

> ———Wis., Nov. 5, 1877.
>
> "The Publishers will please send the *American Agriculturist* for 1878 to the four names below, for which find enclosed $6.40.....N.B. The premium offered for these (No. 0). you will please send to my son Frank, to my care. These names he gathered himself; one of them he walked four miles to get, after school. I have been delighted with his enthusiasm and earnestness, after he determined to earn this premium all himself. Rather than to have him fail, I would have given some one the money, to subscribe through him for the last name, but it was unnecessary. He "did it all himself." I like this giving boys something to do for themselves, and having them learn business habits. What Frank has learned in this *business* enterprise, will do him good in after-life. —— ———."

The Publishers are human, and how could they help being pleased with *such* a letter. They get many of like import, and we hope they will get thousands more this month and next, for there are a great many good things in the Premium List for all Boys and Girls, and they can get them too, "all by themselves"—such as a useful Microscope (61 or 62), or Bracket Saw (59), or Tools, (53, 26–29), or Pocket Knife (41, 37, etc.), or Skates (48).—See page 481.—We *know*, almost any enterprising Boy (and Girl too)—and that means you—can get some of these things this month, because a good many thousands of others have done it. For the Larger Boys and Young Men, there are many fine things in the Premium List, and they ought to set about getting them. The business tact, and the art of persuasion they will acquire in the effort, will in after-life be worth far more even, than the things they get, though a Great Dictionary (No. 85) will be of great value, and there are many other good things.

The Doctor's Correspondence.

I supposed that when summer was over, the questions about insects would be fewer, but I do not find this to be the case. Instead of the insects in their perfect or lively condition, I am now receiving the cocoons and the chrysalids, in which state the insects have gone into winter quarters. That is right, I am glad that you go about with your eyes open, and when you come across these curious things, I like to have you send them. You shall know about them in good time, for the insects that made these, have gone to rest for the winter, and as we had so much insect talk this summer, we will let these wait for a while....Here is

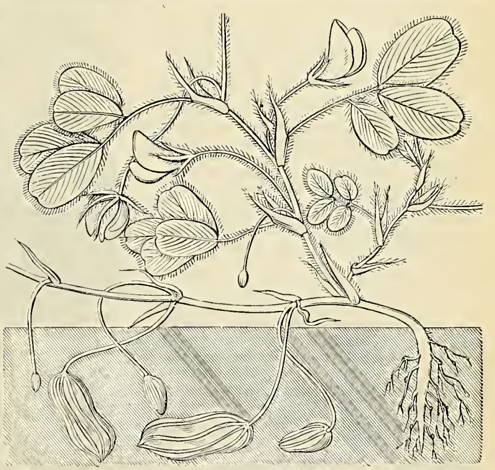


Fig. 1.—PEA-NUT PLANT.—THE PEA-NUTS GROWING IN THE GROUND.

A QUESTION ABOUT PEA-NUTS.

All boys like pea-nuts, and I think that some girls do, too, for this letter is from Miss "Mab," Madison, Wis. She tried to grow some last summer, and had very good success, but she does not know so much about them as she would like, and wishes that some one would tell her "*all* about the growing and curing of them." In some parts of the country pea-nuts are a very important crop, and, no doubt, before planting-time comes again, there will be something about them in the other part of the paper, though I do not think they can be made profitable so far north as Wis. This is hardly the place, the Boys' and Girls' Columns, in which to tell *all* about pea-nuts, though I may very properly give here something about the way pea-nuts grow. Here is a good place to stop, and ask

WHAT ARE PEA-NUTS?

Most every one knows that they grow in the ground—indeed, they are often called "ground-nuts." Potatoes grow in the ground, and we call them tubers; are pea-nuts tubers? You will find that, besides the difference in size, they are very unlike potatoes; they have a shell, which can be cracked and opened, showing the kernels within, and these kernels come up like seeds; the pea-nut is much more like a pea, than like a potato, so we call it a fruit, and that kind of fruit known as a pod. But you know that the pods of the pea are picked directly from the vine, while the pea-nut is dug out of the earth—how do the pods of the pea-nut get into the ground? To see how, you must watch the plant, but as you can not do that now, I will tell you what to do next spring, for it is one of the most curious operations done by any plant, and to watch this is well worth the little trouble that it will be to raise a few plants. I here give you an engraving, which shows the way the plant manages, but those of you, who can get a few *raw* pea-nuts next spring, can plant them, and watch their growth yourselves. You must not be too much in a hurry, but wait until the earth gets warm, about the time older persons plant beans and melons will do, and having a bit of rich ground, you can plant your pea-nuts, having first shelled them, either in a little row, putting them 6 or 8 inches apart, or three or four seeds in little hills, two feet apart. If the pea-nuts were good—mind, you can't raise *roasted* pea-nuts—the plants will appear in a few days. The weak stem bears leaves with four parts. After a while the plant will produce flowers—very small yellow flowers, each on a stalk from just where the leaves join the stem. The engraving (fig. 1) gives only a very small part of a plant, but enough to show what you must look for. The little yellow flowers wither soon after they bloom, and the ovary, the part which is to be the pod, is left in the calyx, or green part of the flower. Then the stalk of the flower turns downwards, and another stalk, right under the ovary, which we did not notice before, it being so short and hidden in the calyx, begins to grow, and grows on and downwards for several inches, or until it reaches the earth, and if the ground is loose and light, as it should be, the growing of this stalk

PUSHES THE YOUNG PEA-NUT INTO THE GROUND,

and when once there, it grows very rapidly, and when full grown, ripens. Here then, in the pea-nut, we have a plant that flowers above ground, but actually, by force, buries its tender little pods in the soil, that they may ripen underground. What is quite as strange as anything about it—if for any reason the young pods fail to reach the ground, they wither and fail to make pea-nuts. The engraving shows a part of a plant, with its flowers, and some of the very young fruit, pointing downwards, while in the lower part of the picture, you see the pea-nuts of different sizes as they lie in the ground, from the very smallest to the full-grown nut. There are many curious plants, but I do not know of any that behaves more strangely than this, which, as if fearing the boys might get at it, hides its fruit away in the earth, until ripe.

HOW EELS ARE CAUGHT.

"W. H. F." Yes, the story is true that a factory was stopped not long ago by eels; the mill where it occurred is not over a mile from my house, and the same thing has happened in other places. Your difficulty in understanding how this could occur, is because you have in mind the old-fashioned water-wheel, where there is a plenty of space all around it. At the present time what is called the "Turbine Wheel" is largely used. In this the wheel is placed horizontally, and inside of an iron box; the stream of water passes in at one opening in the side of this box, and out at the other, and in so doing strikes against the paddles, or buckets of the wheel, and pushes it around. You can understand how, in such a wheel as this, a large number of eels, and there were several bushels of them—could clog it up, and stop its working. This happened in the fall, when the eels were

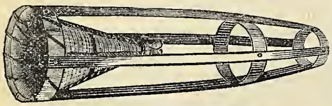


Fig. 2.—FRAME OF EEL POT.

GOING OUT TO THE SEA.

Wherever fresh-water streams and ponds connect, in however roundabout a way, with salt water, the eels come into them in spring, and go out to the sea in the fall. Of course, there are many places where the fish can not do this, and must stay all the time in fresh water; but wherever they can reach salt water, even by going very long distances, they make their regular journeys. As to catching eels, there are several methods, but the easiest for you would be to set, what is called by the fisherman, an "eel-pot." Figures 2 and 3 show the regular pot, as used along the coast. It is a long basket with a funnel-shaped mouth; figure 2 shows the framework, and how the mouth is fixed, and in figure 3 you have the same filled in with basket-work, usually strong oak-splints, as they have to stand rough usage. The bottom is arranged to open, so that the eels may be taken out. Some pieces of meat or fish, no matter if somewhat old, are put into the pot, to attract the eels; the pot is then anchored at the bottom of the stream by a heavy stone, and a float, which may be a stick of wood, or a bit of board, is fastened to it by a cord, which allows the pot to be found and pulled up. The fish, attracted by the bait, nose around, until they find the funnel at the end, and readily pass in, but when they try to get out, they keep along the sides of their trap, and but rarely find the place by which they entered. I have spoken of the eel as a fish, and will answer now what many of you are thinking of, by saying that

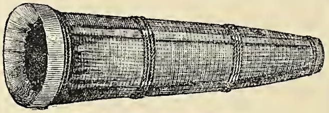


Fig. 3.—EEL POT COMPLETE.

AN EEL IS A GENUINE FISH,

as much as a trout or a cod. There is a common notion that eels are in some way related to snakes, but there is no closer relationship than any other fish has. Their very long bodies, and squirming motion, give them a snake-like look, but it is only in appearance, for in all respects they are true fishes, and no one who likes eels, need avoid them in the fear that they may eat some "unclean thing."....Here is a letter from one of my youngsters in Cook Co., Ill., who asks me for some

DEVICE FOR TRAPPING RABBITS.

If "W. A. B." will look back to these columns for February of last year (1876), he will find quite a full rabbit story. The ways of catching them in snares are there given, and also one method of trapping. In some localities rabbits, especially if there is snow on the ground, do great injury to young fruit trees, and to shrubbery, causing serious loss, and they must be poisoned, shot, or trapped. The trap shown in the article referred to is not the simplest kind, and I give here an engraving of a common box-trap, which almost any boy can make. This is shown in figure 4, and is about 20 inches long, and 8 inches wide and high, with the top and front end fastened together, and hinged to the other end. The rear end may be made high and pointed, or a piece nailed on, as seen in the engraving.

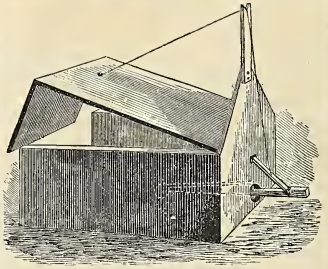


Fig. 4.—BOX TRAP.

TO SET THE TRAP

you will need two pieces of wood and a string. One piece of wood you will whittle round, making it somewhat larger than a lead pencil, and 8 or 10 inches long; point it at one end, and make a notch near the other end; this is the bait stick. The other piece is for a brace; this is a flat piece, with each end sharpened by cutting it away from one side, like the edge of a chisel. Bore a hole through the rear end, higher up than that in figure 4, say 3 inches from the bottom, and large enough for the bait stick to pass through easily, then fasten one end of the string to the cover, near the front, pass it over the top of the rear end, where there should be a notch, and tie the other end of the string to the brace; to find how long the string must be, put the bait stick in the hole, one end of the brace in the notch near the end of this stick, and the other end of the brace in a slight notch made above the hole. When all is in this position, the string should be long enough to lift the cover so high that the rabbit can easily enter the trap. When the bait-stick is moved in the least, the brace will leave the notches and down comes the cover. You will see that the notches must not be very deep—just enough to hold the brace.

BUT ABOUT THE BAIT?

Well, it should not be forgotten, as the rabbit will hardly go into the trap and spring it for amusement. Use a piece of sweet apple, well stuck upon the point of the stick; a bit of turnip or other root will answer, though an apple, especially a sweet one, is the best.

◆

Aunt Sue's Puzzle-Box.

The following enigma (by J. W. W.) is somewhat difficult of solution, the last four or five items being uncommon words, and most of the others having so wide a range as to be a little indefinite. I shall be happy to publish the names of all those sending the answer.

No. 1. NUMERICAL ENIGMA, FROM JOHN W. WHEATLEY.

I am composed of 42 letters:
My 41, 20, 7, 23, is a bird.
My 34, 10, 5, 31, 14, is also a bird.
My 15, 35, 26, 42, 25, 11, 14, is a plant.
My 30, 40, 29, 37, 13, 26, 35, means "pure."
My 1, 5, 4, 27, 40, is a thicket.
My 8, 28, 32, 42, 6, 10, 29, is a number.
My 12, 11, 14, 22, 6, was a celebrated poet.
My 39, 11, 5, is to quarrel.
My 4, 26, 31, 29, 11, is a tropical fruit.
My 5, 7, 13, 36, 18, 2, 9, is a bold, blustering fellow.
My 3, 17, 36, 23, 13, 22, is the marmoset.
My 15, 9, 2, 4, 23, 37, 14, 27, 14, 20, 16, 26, was a great author's fictitious name.
My 30, 37, 5, 9, 11, 24, is a kind of muslin.
My 27, 17, 29, is a musical instrument.
My 29, 13, 33, 28, 12,—bright, lustrous.
My 19, 2, 38, 10, 23, 21, 12, 40, is stupidity.
My whole is good advice.

No. 2. NUMERICAL ENIGMA, FROM LOTTIE F. TAYLOR.

I am composed of 23 letters:
My 1, 18, 11, 19, 3, is a number.
My 9, 21, 15, 17, 7, 4, is generally made of glass.
My 12, 10, 16, 2, may be made of wood, tin, glass, or china.
My 9, 5, 6, 13, 14, is a kind of boat.
My 23, 5, 22, 8, is a girl's name.
My 20, 10, 13, is worn on the head.
My whole is a well-known proverb.

CROSS WORD, BY R. F. G.

My one and two are in thought but not in brain,
My three and four are in rush but not in cane,
My five and six are in yellow but not in black,
My seven and eight are in shoulder but not in back,
My ninth is in mind but not in soul,
I hope you all love (as you live in) my whole.

HALF-WORD SQUARE.

1. A bird. 2. A person walking. 3. Blooming. 4. A plaything. 5. A pronoun. 6. In action. NUTMEG.

PI.

"Oto teal I dyetas, gevifro het micer,
Henededn welf het shuro,
Rof sosileens laslf teh otfo fo mite
Hatt nyol edstra no wolfser." MAGGIE SMITH.

ANAGRAMS.

1. A later ten.
2. I'm a crony.
3. Pin tears lid.
4. Lead me on.
5. Up! search!
6. Made tire.
7. Drier mane.
8. I get a note.
9. Time canters.
10. Come to get rail.

L. N. J.

BLANKS.

(Fill the first blank in each sentence with the required word, and add a letter to the same word—to fill the second blank. For example. I have just —— about the —— riots. Solution: read, bread.)

1. Please leave —— the coats in the ——.
2. We have planted the seeds in a —— and hope they will ——.
3. I wish you would —— the buckle on that ——.
4. The —— was very fond of looking in the ——.
5. The —— was very —— to see his father.
6. They said we might —— through the ——.
7. The —— will not grow in every ——.
8. The water is so —— that it will scarcely ——.

PUZZLE.

Take a hundred and ten and divide it by nothing,
A queer kind of sum you will say.

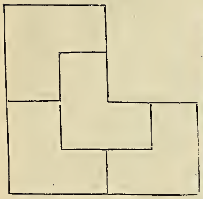
DIAMOND PUZZLE.

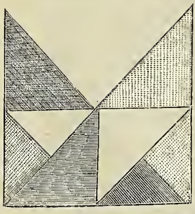
1. Part of a cap. 2. A vessel. 3. Markets. 4. An island. 5. Part of the body. 6. Chilly. 7. Part of a hat. The central letters, perpendicular and horizontal, form an island. NIP.

CONCEALED BIRDS.

1. Joe Clark went to school with me.
2. He lived in Wrentham, Mass.
3. I was told he came from Tonqua, Illinois, but I could find no such place.
4. Throw some sand over the floor.
5. Come Meg, rouse up girl!
6. When are you going home?
7. Do look at those pigs wallowing in the mud.
8. I had quite an argument with her on the matter.
9. He ate all the bread that was left.
10. When does a cow look like an orange? When she looks round.

ANSWERS TO PUZZLES IN THE OCTOBER NUMBER.


Solution to R. T. M.'s "old puzzle."


Solution to the more difficult one.

Square Word.

J A N E
A D A M
N A U M
E M M A

Puzzle. O! why use it? (Out of which you can get "I, thou, he, she, it, we, ye, you, they.")

Anagrammatical Blanks.—1. Adherents. 2. Obstreperous. 3. Aforesaid. 4. Burglaries. 5. Proboscis.

Transposed Cities.—1. Paris (pairs). 2. Naples (panels). 3. Dongola (gondola). 4. Lodi (idol). 5. Rome (more). 6. Caen (cane). 7. Gera (rage).

Metagram.—Doge:—in which may be found (1) go, (2) do, (3, 4) dog, doe, and (5) god.

Anagrams.—1. Observances. 2. Connivance. 3. Vernacular. 4. Momentarily. 5. Ambuscades. 6. Onslaught. 7. Treacherous. 8. Ecclesiasticism.

* * *

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

Aunt Sue's Chats.

Autumn Basket.—Addie very kindly sends instructions for making an "autumn basket." She says, "they are very pretty and cost very little. You can buy a sheet of card-board [white, I suppose—A. S.] for about ten cents, which you cut in four parts. Take one part for your work. Buy a very small oval basket (such as are used for hair-pin baskets); cut it exactly in half, lengthwise; then sew one of the halves upon your card a little below the center. Sew or stick moss around the edges [of the basket, I presume, to hide the stitches or fastenings—A. S.]; then fill the basket with ferns, mosses, leaves, grasses, and berries, arranging them tastefully (see fig. 1). If you can afford to frame it, it will look very pretty set back in a box [why wouldn't one of our lamp-lighter frames do?—those described on page 267 of the July number of *American Agriculturist*, 1877—A. S.]; if not, you can finish it off with little bows of some pretty color, and pin on the wall. You can make wall-pockets the same way, by cutting out a pocket from cardboard and covering the face of it with moss and pieces of cones, then fill with your ferns and grasses. I have made a great many for fairs."—It would be scarcely worth while, Addie, to answer your question about leaves, as it will be December before you see this. I do not know how to crystalize grasses; but I suppose they are dipped in a strong solution of alum-water. [In the *American Agriculturist* for Dec., 1874, page 460, will be found a full and practical account of the method.—Ed.] To tell the truth about it, I never liked crystalized grasses; the process always seemed to me like "painting the lily and scenting the rose," but if other people like it, I know of no good reason why they shouldn't have it. There is room here for a little sermon on letting other people enjoy themselves (harmlessly), and as I do not often preach, I will indulge this once; beginning by relating an incident which may "point a moral." Some time ago we spent the summer at the Berkshire Hotel, in Great Barrington, Mass. A lady friend happened to arrive at the same time with us. We were shown to the rooms that had been assigned to us, and after we were well settled in ours, I went to my friend's to see how she liked her quarters. "Oh! very much, indeed!" she said, "look what a pretty peep I have of the river."—"The river?" I exclaimed, "where?"—"There," said she, pointing in a certain direction. I looked, and remarked, "Isn't that nice!"—And what do you think that "river" was? The roof of the bowling-alley! My friend was very near-sighted;—the old shingle-roof was shiny and bleached by time; trees grew behind it, and I could easily imagine how their tops might look like bushes on a river's bank. I thought that if her misfortune (near-sightedness) conduced to her pleasure by allowing a range to her imagination, I would not detract from such pleasure by any statement of facts, so I never mentioned bowling-alley to her. I believe that one can get a great deal of comfort and happiness by trying to promote the pleasure of others.

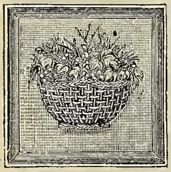


Fig. 1.—basket.

M. Findlay wants to know if I can tell her how to make a "hanging-basket" of cotton-flannel or old rags....I would rather you should make it than I, May! You will need over twenty yards of rag, about an inch and a half wide, and you will have to fringe it about half an inch or more on each side of the strip. Make a small hoop of wire, cane, or whalebone, (eight or ten inches in diameter), and cover it with the same material as you are using for the strips. Sew one end of your strip to the ring. Drop it to form a loop about half a yard long, from the ring downwards; make another loop of the same size above the ring (as in fig. 2), fasten it at the ring where it comes in contact with the strip, and make these loops all the way round the ring, letting the edges of the strips touch each other, or even lap a little. Now tie a ribbon around the loops below the ring, so that you will leave a tassel of the fringed strips (as in fig. 3). Tie another piece of ribbon around the upper loops, so that the remainder, forming a tassel, shall drop down inside, nearly to the loop. Now festoon a strip of fringed rag around the hoop outside the strips, and your basket is complete. Dried ferns and autumn leaves stuck everywhere about such a basket, look exceedingly graceful and pretty, but, of course, it is all very frail and needs dainty fingers to take care of it. You can sew the loops on to the ring in groups of three strands, if you choose, instead of sewing them all round close together. New, white linen makes the prettiest basket, but it soon gets dusty and soiled.

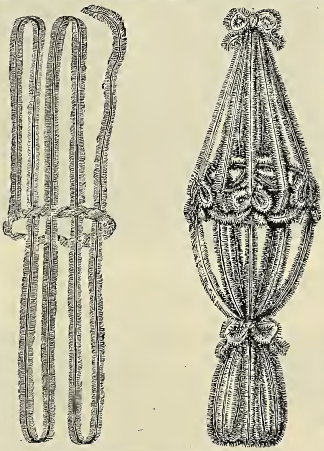


Fig. 2. BASKET OF RAGS. Fig. 3.

The Metric System of Measures and Weights.

Last month I told you that the system of measures and weights was called the Metric System, because the *metre* was the starting point, and stated how this starting point, or standard, was fixed upon. It was also said that one great advantage of this system is, that all parts of it—whether measures of any kind, or weights—have a direct relation to the metre, and that measures of capacity and even weights, are easily found from the measure of length. Suppose you were where you wished to measure gallons, (or bushels), and had no vessel or measure known to be at all accurate, though you had a foot rule. How many persons, I wonder, could, from a foot rule, make a gallon measure, even if they should, by chance, recollect that a gallon was 277.274 cubic inches. With the Metric System it is quite easy to get one kind of measure from another; if one has a metre measure, which, you know (see table last month), is not divided into inches, but into tenths and hundredths and thousandths of a metre. I do not mean easy to get a gallon from the metre, but to get the liquid measure of this system. As the metre is the unit in measures of length, so is the *Litre* the unit in measures of capacity, and to get this measure, you have only to make a square box that measures a *decimetre* (a tenth of a metre) each way—a cubic decimetre—and you have a litre, from which you can get all the other measures. In the table given last month, for all the divisions of the metre Latin numerals were used, but for measures longer than a metre, Greek numerals are prefixed. It may be well to state these again, as they are employed in all the measures and weights of the system.

For division Latin prefixes.	Mille = 1,000 Centum = 100 Decem = 10	For multiplication Greek prefixes.	Deca = 10 Hecaton = 100 Kilios = 1,000 Myrias = 10,000

The litre being the starting point for measures of this kind, we have then:

Millilitre	$^1/_{1000}$ of a Litre.
Centilitre	$^1/_{100}$ "
Decilitre	$^1/_{10}$ "
Litre	1 Cubic Decimetre.
Decalitre	10 Litres.
Hectolitre	100 "
Kilolitre	1,000 "

As many boys and girls will find this too much like school lessons to be very lively reading, I only give one kind of measure at a time, and hope that by taking it in small portions you will care enough about it to remember it. I last month told you that the metre was equal to a little over 39 inches in length, and you will no doubt wish to know the relation of these measures to those in common use with us. A litre is a little over our wine quart, or 1.0565 quart. We have three kinds of liquid measure, and a dry measure besides, while the decimal system has but one measure for wet or dry articles, which is much simpler. A *hectolitre* is almost three bushels, or 2.837 bushels. By making use of the Metrical System, we should get rid of Wine, Imperial, (used in England), and Beer measure, for liquids, and Dry measure for solids, and have only one kind of measure for everything and everybody, and grocers could not buy their milk by beer quarts and retail it by wine pints, as they now do in cities, and make considerable by the difference. **The Doctor.**

A Mechanical Pig.

Mr. Macarty was a mechanic, such a remarkably ingenious man, that his neighbors said that he could do anything from repairing a watch to making a steam-engine. They felt very sure that if Macarty would make a clock, it would beat the old town clock on the church-steeple several hours in the day. Mr. Macarty had a son, and he had great hopes that he would grow up to be a mechanic, and be even a better workman than his father. He called his son Archimedes—but the boy's playmates called him Arky Macarty. Arky was a very ingenious boy, and he was also full of fun. Once, when his father was absent from home for a few days, having been called to do a job in the next town, there appeared on the fence, where the people of the village passed by, a board on which was printed:

"MEKANIKLE PIG—A GRATE KURIOSSITY—this Ear pig has jOints like ennY pIg, it moVes as naTTeral as EnnY piG—& kan EveN ete & SKwEal—Ad mishin 3 pins. Arky Makarty."

Some good-natured people, who knew that Arky would have something funny to show, stopped to see the wonderful pig. Arky was careful to get the proper number of pins for the admission fee, and then opened the pen and let out the "mechanical pig." The young scamp had got hold of some black paint, and having caught one of his father's little white pigs, had painted lines around the parts, so that at a little distance the hind-legs, and ham, the shoulders, and even the head looked as if they had been made in separate pieces, and were fastened on. This deceit was helped by the painted pivots at the proper places, so that the pig had really a very "mekanikle" appearance, as may be seen in the picture of it on the next page. Those who first saw the animal, greatly enjoyed the joke, and told others, so that Arky was very busy for a day or two in taking in pins and showing his wonderful pig. But at last his father came home, and the sign came down. We do not know what arguments were used, but one thing is certain, Arky never liked to hear the boys at school say anything about pig, and he always acted as if the bench upon which he sat had suddenly become very warm.

Little Alice Tending her Flowers.

LITTLE ALICE TENDING HER FLOWERS.

The above is the title the artist has given his picture, but we do not see, why it might not be Mary, Julia, Sarah, Jane, or any other girl. Indeed, we hope it applies to every girl in our "family," as well as to Alice. Perhaps we see more in the picture than you will notice at first sight. We see that little Alice's plants are very thrifty; we see one in some kind of a jar, that she found not in use, and could have for her flowers, and learned that her plant grew just as well in that as in a regular flower-pot. We see an open window, which shows that Alice knows that plants need fresh air as much as anything else, to make them healthy, so when the weather is mild, up goes the window. Then we see something else—a pitcher; she has been watering her plants, and by their thrifty look we are sure that she has watered them many a time before. If she could have a watering-pot, made for the purpose, or some of the nice contrivances for watering, that she has seen in the papers and catalogues, she would like it. But she can not afford these things, and she knows that water is the thing needed, and is sure that water from the pitcher, which is used for other purposes, will do the plants just as much good as if it came from something made expressly for watering plants. Let this encourage all the girls—and boys too—who would like to cultivate some plants in the house in winter, if they could afford it. We feel very sure that any one, who really wishes to do so, can have window-plants without any outlay—or at most at a very small expense. Let us look into this matter. The first thing needed is the plants, and this is the chief difficulty. If you can afford it, you can easily send to some florist, and have the plants you want come by mail. But many of our young folks can not afford this, and must get their plants in some other way. No doubt you know some one who cultivates house-plants. Did you ever know one who loved plants, who was not liberal? We never did, and are very sure, if you will say to some one, who has a plenty of window-plants, that you would like to have a cutting or two—*slip* is the usual name—when it can be spared, that you will get it in good time, if not at once. We are sure that you can easily get plants from some kind friend But then the pots. Of course, regular flower-pots are the handiest, and in many ways the best, but don't let the want of these prevent your growing plants. Anything that will hold earth will answer. A bowl, even a tea-pot, or a jar of any kind, that is cracked, and no longer fit for its proper uses, but will hold earth. Or you can get, or have your brother make, little wooden boxes. If you can do no better, you can find empty fruit or tomato cans. The Irishman's saying, "Niver mind the book for the kiver," applies here. Never mind what holds the earth, if you love and take proper care of the plant, it will flourish as well in an old tomato or oyster can, as in the most costly vase that ever came from Japan. But if you use anything other than an ordinary flower-pot, you must be careful about watering, and before you put the earth into your jar, or tin can, it is well to place in the bottom an inch or two—according to its size—of broken crockery, oyster-shells, coal-cinders, or small stones; over this put some moss, if you have it, if not, put on a layer of newspaper, and then put in the earth. The object of the moss or paper is to keep the earth from getting down among the crockery or stones. You will want to know, why these things were put into the bottom of the jar or can. This is what the gardeners call "drainage." Ordinary flower-pots are porous, that is, water will gradually pass through their sides; then they have a hole in the bottom, so that if you give the earth in them too much water, that which is not needed, will run off through the hole in the bottom of the pot, or gradually soak away through the sides. This is one important thing in growing window-plants—do not have the earth too wet. Few plants die from dryness, but many are killed by too much water. The right quantity is what the earth will hold, when the water has a chance to drain off. In the common flower-pot it can readily run off, but if you use a tight bowl, jar, or can, the excess of water can not pass off, but you can by the use of broken crockery, stones, and other things, provide a place for it, into which it can drain, and the earth about the roots will not be too wet. So you put moss or paper (cotton might answer as well) over your "drainage," so that the water may gradually pass into the spaces below. By care in watering, danger of getting the earth too wet, will be avoided. But we must not make the story too long; we can not tell all about your plants now, and must leave something for another time. Having a pot of some kind, the next thing is the earth or soil. Any good garden soil will answer, but if it is of a kind that, when dry, bakes hard, you will need to mix some sand with it; any good sand will do, no matter if not very fine; use a quarter or a third as much as you have soil. This is to keep the earth open, so that the water will go to all parts, for if your earth is of a kind that will bake into a brick when dry, the plant will have a hard time of it. Having your plant, and a pot or jar, or something to hold it, you put in the earth, and set the plant. We can now tell you only about watering. You know that if you take up a handful of earth from the garden, it feels moist; if you squeeze it, it will form a mass, showing the prints of your fingers, but no matter how hard you squeeze it, not a drop of water will show itself. The earth has the amount of moisture it can naturally hold. Now you want to keep the earth in which your plants grow, in about the same condition. No rules for watering every day, or every other day, are of any use. Water must be given as the plants need it. The soil must never be muddy on the one hand, nor must it on the other hand be so dry that, when pinched or pressed, it will not hold together. Only practice will tell you when to water. But more about plants another time.

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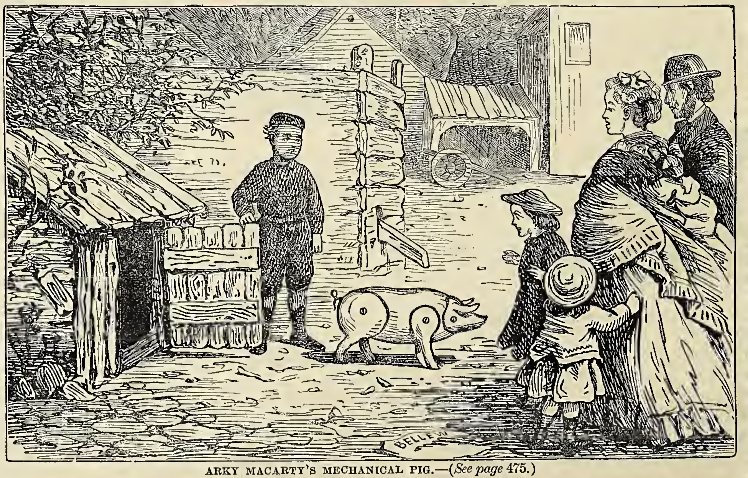

ARKY MACARTY'S MECHANICAL PIG.—(*See page* 475.)

The End.—Right here is the end of the page, and also of the volume for 1877. In a few days we will be busy upon the paper for January, 1878, and we speak no farewell words, because we feel very sure that you will be with us another year, and another, until your children come into our family of Boys and Girls, just as many of you, who now read these columns, are the children of those who, not many years ago, turned to these pages as the most interesting to them of all. We can see a long procession, moving in a circle; here are bright and loving boys and girls, there young men and women, who have thought of city life, but have wisely chosen to stay upon the farm, then come fathers and mothers, and their children make the circle complete. We look at them all, as they pass in imagination, and our wishes go to every one, young and old, for a Merry Christmas and a Happy New Year.

A PAPER FOR YOUNG PEOPLE.—The *Youth's Companion* of Boston employs the same writers as the best English and American magazines, and no other publication for the family furnishes so much entertainment and instruction of a superior order for so low a price. Among its contributors are DINAH MULOCH CRAIK, MISS YONGE, J. T. TROWBRIDGE, LOUISA M. ALCOTT. HENRY W. LONGFELLOW, WM. CULLEN BRYANT, JOHN G. WHITTIER, and nearly fifty of the best story-writers.

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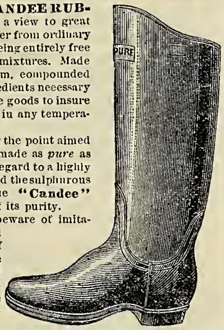

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REPORT
OF THE
SUPERINTENDENT OF THE INSURANCE DEPARTMENT
OF THE STATE OF NEW YORK,
ON THE
Examination of the New York Life Insurance Company,
OF NEW YORK CITY.

INSURANCE DEPARTMENT,
Albany, October 24th, 1877.

The Superintendent having personally, and through the services of the Deputy Superintendent, aided by the force of the Department, commenced and completed a searching examination into the affairs of the NEW YORK LIFE INSURANCE COMPANY of the City of New York, it affords him unqualified pleasure at being able to announce and make public the gratifying fact that the result of this examination is most satisfactory, and that, from the data in possession of the Department, the solvency of this, or other companies undergoing a similar test, can be readily ascertained, at little expense, for many years to come.

This Company was organized in 1845, and no investigation having been made, either by the Department or other properly constituted public authority, prior to the date when the Department was formed, much time has necessarily been expended to bring the matter to a conclusion.

The services of forty-one gentlemen of character, standing, and experience, have been procured, who have valued and appraised the property, situated in forty counties in this State and in the State of New Jersey, covered by 2,629 mortgages amounting to the sum of $17,354,847.84, and 49 pieces of property owned by the Company, amounting in value to the sum of $2,541,576.46; which services have been intelligently and efficiently performed. The abstracts of title to each and every piece of these large amounts of property have been closely examined and reported on to the satisfaction of the Superintendent. All other investments, amounting to $10,311,045.67, have been carefully looked into, and evidence of payment by the Company, either by check or otherwise, for such investments, demanded and given, although many of these payments were made twenty years ago. The cash securities of the Company, the cost of which on the books amounts to $9,730,529.91, are of the most unexceptionable character, and are worth $580,515.76 more than cost.

The Superintendent personally examined these securities, taking the letter, number, and denomination of each security, and preserving the record of the same in the Department. In every instance where securities had depreciated in value, such depreciation had been promptly charged to profit and loss account, and all items of doubtful character had been stricken off by the Company from its assets, and omitted from its reports. Complete seriatim lists of policies, premium loans, and uncollected and deferred premiums have been made, and are on file in the Department.

LIABILITIES.

Every item of liability, real and actual, or contingent, as sworn to by the officers in the last Annual Report made to the Department, a copy of which is herein embraced, has been closely scrutinized, and the statements in said report found to be true to the letter, and no other liabilities were found to exist.

MISCELLANEOUS,

The different Departments—Medical, Actuarial, and Agency—have been reviewed, with the most satisfactory results—gentlemen entirely competent and assiduous having been found in charge of each branch, to whose conduct and performance of their duties much is due.

Agents collecting funds of the Company at different points, are held to a rigid accountability, remittances being required at the larger points tri-weekly, while at the smallest points settlements are not allowed to be delayed longer than one week. Bonds are required where the sums handled are sufficient to justify the same.

The system of book-keeping adopted by the Company, after many years of experience, seems to be perfect—the checks by one division on another being so complete, that no wrong can be done to policy-holders by false entries of any kind short of wide-spread collusion among many employés, all of whom were found to be exceedingly courteous, and, acting under instructions from the principal officers of the Company, were prompt in furnishing full information as to every detail.

Judged by the hardest test that could be applied under the law, and with every doubtful item eliminated from their resources, the net surplus, as shown by the detailed statement of this Company, which follows, amounts to $5,962,878.79.

This exhibit clearly establishes the fact that where a Life Insurance Company is honestly, ably, and prudently managed, there is no occasion to force a showing of solvency by including in its assets prospective value of real estate, and excesses of premium payments to be received.

For the reasons above given, the Superintendent has no hesitation in stating that this great Corporation is entitled to public confidence, and its officers to his warmest commendation.

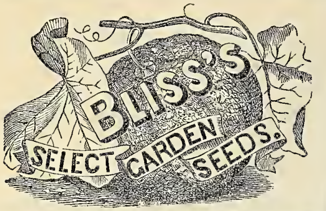
ASSETS.

	Cost Value.	Market Value.	
Real Estate			$ 2,473,097.50
Bonds and Mortgages			17,205,222.84
Stocks, Bonds, etc., owned by the Company:			
Merchants Bank, N. Y., stock	$ 15,758.75	$ 16,100.00	
Bank of America, N. Y., stock	8,484.00	10,164.00	
Bank of the Republic, N. Y., stock	1,470.00	1,470.00	
American Exchange Bank, N. Y., stock	10,125.00	10,500.00	
Metropolitan Bank, N. Y., stock	5,381.25	6,400.00	
United States Bonds	3,792,113.97	3,892,763.34	
Central Park Loan	25,233.75	26,750.00	
Delaware and Hudson Canal Co., stock	44,800.00	44,800.00	
Delaware and Hudson Canal Co., bonds	400,000.00	400,000.00	
New York Street-Opening bonds	549,967.10	576,110.00	
New York County Bounty Bonds	41,104.00	42,000.00	
New York City consolidated bonds	645,596.25	745,875.00	
New York County consolidated bonds	113,928.75	131,625.00	
New York City (Morrisania and West Farms) bonds	60,000.00	60,000.00	
New York Central and Hudson River R. R. bonds	1,019,382.50	1,170,000.00	
New York and Harlem R. R. bonds	1,074,075.00	1,178,333.33	
Brooklyn City bonds	983,144.80	1,024,700.00	
Jersey City bonds	442,425.00	450,590.00	
Yonkers Town bonds	178,479.16	183,700.00	
Newark City bonds	129,875.00	131,210.00	
Flushing Water bonds	77,600.00	80,000.00	
Rensselaer and Saratoga R. R. bonds	9,519.92	10,155.00	
Eastchester bonds	5,000.00	5,000.00	
Richmond City bonds	46,250.00	56,500.00	
Tennessee bonds	8,000.00	8,000.00	
Georgia bonds	2,730.00	3,500.00	
Alabama bonds	15,840.00	15,840.00	
South Carolina bonds	8,960.00	8,960.00	
Mississippi warrants	15,285.71	20,000.00	
Totals	$9,730,529.91	$10,311,045.67	10,311,045.67
Premium Notes and Loans			$ 781,585.39
Cash in Banks and Trust Companies			1,427,933.18
Interest due and accrued on Bonds and Mortgages			224,052.75
Interest due and accrued on Stocks and Bonds			42,320.39
Interest due and accrued on Premium Notes and Loans			25,709.37
Rents due and accrued			8,476.17
Premiums due and unreported		$125,027.15	
Premiums deferred		432,695.40	
Total		$557,722.55	
Deduct 20 per cent estimated cost of collecting above		111,544.51	
Net amount			$446,178.04
Total admitted Assets			$32,945,621.30
ITEMS NOT ADMITTED:			
Agents' Balances		$ 36,154.19	
Cost value of Real Estate over present appraised values		68,488.96	
Loans on Mortgage in excess of present value		149,605.00	
Total			$254,248.15
Total Gross Assets			**$33,199,869.45**

LIABILITIES.

Death Losses and Matured Endowments not due	$ 418,393.19
Death Losses and Claims resisted	97,200.00
Premiums paid in advance	17,038.32
Estimated liability on Lapsed Policies	10,000.00
Net Re-insurance Reserve	26,440,111.00
Total Liabilities	**$26,982,742.51**
Surplus as regards policy-holders on the basis of admitted assets as determined by this report	**$5,962,878.79**
Surplus as regards policy-holders on the basis of total assets, as reported by the Company	**$6,217,126.94**
Estimated surplus of Tontine policy-holders included in the above	**$ 517,504.84**

JOHN F. SMYTH, Superintendent.



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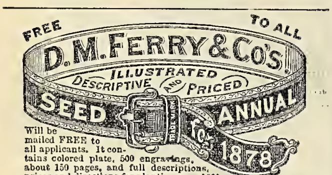

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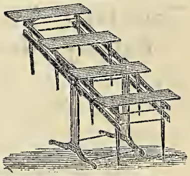

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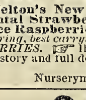

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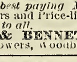

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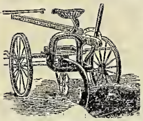

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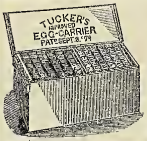

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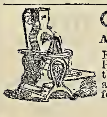

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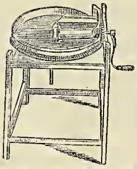

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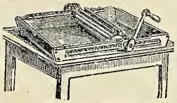

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SEVENTH PAPER.—Wet Feet, the harm they do, and the remedy—the hygienic boot.

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[In the following table is given the price of each article, and the number of subscribers required to get it *free*, at the regular rates of $1.60 a year, and also (with a part of the premiums), at the club rates of $1.10 a year, postage included, which is prepaid in all cases *by the Publishers.*]

TABLE of Premiums and Terms

For Volume 37—(1878).

Open to All—No Competition.

No.	*Names of Premium Articles.*		*Price of Premiums.*	*Number of Subscribers required*	
				at $1.60	*or at* 1.10
1	*Tea Set (Middletown Plate Co.)*........		$50 00	66	....
2	*Ice Pitcher (do. do. do.)*		$13 00	20	130
3	*Cake Basket.. (do. do. do.)*		$ 7 50	16	63
4	*Cake Basket..(do. do. do.)*		$10 00	18	100
5	*Casters.... (do. do. do.)*		$ 5 25	13	55
6	*Casters.... (do. do. do.)*		$ 7 50	16	63
7	*Casters.... (do. do. do,)*		$10 50	19	120
8	*Butter Cooler(do.. do. do.)*		$ 6 50	15	60
9	*Pickle Jar and Fork. (do.)*		$ 5 00	12	50
10	*Syrup Cup with plate. (do.)*		$ 6 25	15	60
11	*Child's Cup (do.)*		$ 3 50	8	35
12	*Twelve Teaspoons(Meriden Cutlery Co.)*		$7 25	16	63
13	*One Dozen Tablespoons (do. do.)*..		$14 50	22	147
14	*One Dozen Table Forks (do. do.)*..		$14 50	22	147
15	*Ladies' Folding Pocket Scissors, (do.)*..		$ 1 50	4	....
16	*Child's Knife, Fork & Spoon...(do.)*...		$ 3 00	8	30
17	*French Cook's Knife, Fork, & Steel (do.*		$ 3 75	9	37
18	*Case of Scissors (U.S. Steel Shear Co.)*.		$ 4 00	10	40
19	*Portable Writing Desk, (C. W.F.Dare)*.		$ 1 75	4	....
20	*Walnut Work Box, (do.)*		$ 1 25	4	....
21	*Buck-Saw for Boys. (do.)*		$ 50	2	....
22	*Little Girl's Wash Set, (do.)*		$ 1 00	3	....
23	*Sled, (do.)*		$ 2 00	5	20
24	*Spring Horse, (do.)*		$11 00	18	110
25	*Boy's Wagon (C. W. F. Dare)*..........		$ 5 00	12	50
26	*Boy's Tool Chest, (E. I. Horsman)*.....		$ 1 00	3	....
27	*Boy's Larger Tool Chest (do.)*		$ 2 50	7	25
28	*Boy's Larger Tool Chest (do.)*		$ 5 00	12	50
29	*Pat. Magic Bellhead Pencil (Ludden & Taylor)*........................		$ 1 50	4	....
30	*Ladies' Magic Charm Pencil (do. do.)*.		$ 2 00	5	20
31	*Gents' Magic Charm Pencil (do. do.)*.		$ 2 75	7	27
32	*Gold Pen, Telescopic Case (do. do.)*.		$ 2 50	7	25
33	*Gold Pen and Pencil, Elegant (do. do.)*		$ 5 50	13	55
34	*Knives and Forks (Patterson Bros.)*..		$14 75	22	147
35	*Knives and Forks (do. do.)*...		$18 50	28	185
36	*Carver and Fork (do. do.)*...		$ 3 75	9	37
37	*Pocket Knife (Meriden Cutlery Co.)*..		$ 1 50	4	....
38	*Pocket Knife (do. do.)*..		$ 2 00	5	20
39	*Pocket Knife (do. do.)*..		$ 2 75	7	27
40	*Ladies' Pocket Knife (do. do.)*..		$ 2 00	5	20
41	*Multum in Parvo Knife (do. do.)*..		$ 3 50	8	35
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47	*Crandall's "Menagerie"*		$ 2 00	5	20
48	*Pair of Skates (Patterson Bros.)*......		$ 3 50	8	35
49	*Boudoir Clock (S. B. Jerome & Co.)*...		$ 3 50	8	35
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55	*Pocket Tool Holder (Miller's Falls Co.)*		$ 1 00	3	....
56	*Piano, Splendid 7-oct.(Steinway & So's)*		$650 00	625	....
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60	*Payson's Indelible Ink—Pen, etc*.......		75	3	....
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62	*Abbott Pocket Microscope (L.G.Abbott)*		$ 1 50	4	....
63	*Cahoon's Broadcast Seed-sower*.......		$ 5 00	12	50
64	*Moore's Floral Set (Moore Man'f'g Co)*		$ 1 00	3	....
65	*Garden Seeds & Flower Bulbs (select'n)*		$ 2 00	5	20
66	*Planet Jr. Combined Drill & Hoe (S. L. Allen & Co.)*....................		$12 00	19	120
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68	*Double Barreled Breech-loading Gun*.		$50 00	66	....
69	*Shot Gun (E. Remington & Sons)*		$ 6 00	14	60
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74	*Hunting & Target Rifle (Remington)*..		$22 00	34	....
75	*Vest Pocket Pistol (Remington)*........		$ 3 75	9	37
76	*Revolver (Remington)*		$ 9 00	17	90
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81	*" Saratoga" Potato Peeler & Slicer (do.*		$ 1 00	3	....
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ORANGE JUDD COMPANY, Publishers, 245 Broadway, N. Y.

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PREMIUM
Explanatory Notes.
N. B.

Read and carefully Note the following Items: The Table, on page 401, tells the *name* and *cash price* of each article, and (in last column but one), gives the number of names sent in at the regular price of $1.60 a year that will secure any premium article. (The last column gives the number of names at the lowest club price for 20 or more names, that is $1.10 each, but only a part of the premiums come under this head. Some persons quickly raise large clubs by taking all the names at $1.10 each, and themselves pay the difference, 50 cents each, and even thus get the premium articles very cheaply.)....(*a*) All subscribers sent by one person count, though from several different Post-offices. But....(*b*) Tell us with each name or list of names sent, that it is for a premium....(*c*) *Send the names as fast as obtained*, that the subscribers may begin to receive the paper at once. Any one can have any time desired, up to next July, to complete any list, but every premium desired will be sent as soon as earned and ordered....(*d*) Send the exact money with each list of names, so that there may be no confusion of money accounts....(*e*) Old and new subscribers all count in premium clubs, but a portion at least should be *new* names ; it is partly to get these that we offer premiums to canvassers....(*f*) One or two Specimen Numbers, etc., will be supplied free, as *needed* by canvassers, (when 3 cents per copy is furnished to pre-pay postage), but they are expensive, and should be used carefully and economically, and where they will *tell*. Other specimen numbers will be sent, post-paid, *to canvassers only*, for 10 cents each. The price to others is 15 cents....(*g*) Remit money in Checks on New York Banks or Bankers, payable to order of Orange Judd Company, or send Post-office Money Orders. If neither of these is obtainable, Register Money Letters, affixing stamps both for the postage and registry ; put in the money and seal the letter in the presence of the Post-master, and take his receipt for it. Money sent in any of the above ways is at *our* risk ; otherwise it is not.

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It often happens that persons, who have not time to secure these valuable and useful premium articles by raising clubs of subscribers, are desirous of purchasing one or more of them, and wish us to procure or select them. For the accommodation of such, *we will supply and send most of these premiums for cash*, at the prices in the Descriptive List, and prepaid or otherwise, as stated.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 457.

A Consumptive Cow.—"C. M. B.," Norfork Co., Va. Cows are subject to consumption of the lungs, or as it is called tuberculosis. The symptoms are a deep cough, dry, hot muzzle, heaving at the chest, bright glassy eye, with pale membranes around this organ. When thus diseased the milk is not fit for use, as the whole system with the blood is diseased. This is a blood disease which finds its development in the lungs, and not precisely a disease of the lungs.

Western Virginia.—"E. J. S.," Allentown, Pa. There are many tracts of good farming land in West Virginia suitable for colonies, or a number of persons emigrating from the same locality, that may be bought for four or five dollars per acre. These tracts are now covered with fine timber, but partly cleared land can be procured for $10 to $20 an acre. Mr. A. J. Vosburg, of Red House Shoals, Putnam Co., W. Va., would give information without charge, to parties wishing it.

Indigestion in Lambs.—"D.," Tehuacana Hills, Tex. When lambs are suffering from indigestion, the contents of the rumen often regurgitate through the gullet into the mouth in the form of a green semi-liquid substance. If this is tested with soda, it is found to possess considerable acidity, which is probably the reason why the stomach is thus disturbed. As a remedy, give the lambs a teaspoonful of powdered chalk or a tablespoonful of a mixture of equal bulks of powdered chalk, ground ginger, and peppermint water, adding enough water to make it fluid. This is useful to keep on hand for this common ailment of lambs.

Fertilizer for Wheat.—"J. T. B.," Mt. Sterling, Ky. As an artificial fertilizer for wheat, the formula of Prof. Ville, or that of Prof. Stockbridge, might be usefully applied. That of Prof. Ville, as prepared by the Mapes Formula Co., contains 7.69 per cent. of ammonia ; 5 per cent. of phosphoric acid, and 7.59 per cent. of potash, all in an immediately available and active condition. This costs $2.75 per 100 pounds. Where the winter is open, as at the South, this may be used now with benefit.

Spring Rye.—"J. W.," Vermontsville, Mich. It being too late to sow fall rye, the only substitute that would give a supply of straw for binding fodder would be spring rye. Seed can be procured of any dealer in grain seeds. Sow as early as possible in spring.

Value of Slaughter House Refuse.—"P. A.W.," Fiskville, R. I. The refuse of slaughter houses and blood are valuable fertilizers, worth more per ton than barn-yard manure. To keep them at this time for use in the spring, mix them with earth.

Cow-Pox.—"W. E. L.," Gardiner, Me. Cow-pox is known by the appearance of sores like boils upon the cow's udder, teats, and insides of the thighs and fore-legs. These sores are covered with brownish crusts. depressed in the center, and surrounded with a reddish circle. They break and crack open when rubbed or squeezed in milking. This disease unfits milk for use.

Emigration of American Workmen.—A statement to the effect that the services of workmen and mechanics were in demand in England, and that many men had left this country to seek work there, has been made much of to the disadvantage of business in this country. It turns out that those men who left here for England were engaged by employers whose men where on a strike, as a means of influencing their workmen to make terms. The contracts under which the American workmen were hired contained no notice of the situation of matters in England, and also obliged the men to hypothecate their tools as security that they would fulfil their engagement. The whole business has turned out disastrously. The men either cannot or have not worked, have lost their tools, and are in distress. Moral : it is generally safe to stay at home and "bear the ills we have than fly to others that we know not of."

A Case of Fistula in Ano.—"S. L. H.," Chester, N. J. When a fistula in ano is well established, it simply amounts to a double passage and no harm or difficulty occurs. Everything may go on perfectly well, and probably will if the fistula is let alone.

Canning Corn.—We stated last month, as we have several times before, that we know of no method by which green corn could be *canned* other than in soldered tin cans, and by long boiling, and that the process was one that could not be well followed in the family. Several have written to show that our view is incorrect, and kindly give us the processes which they have found successful. By *canning* fruit and vegetables, we understand putting them in air-tight jars or cans, and securing their preservation by exclusion of air. The sugar added to fruit is not necessary to its preservation, but to prepare it for use when required for the table. All the processes of preserving green corn sent by our correspondents do not come under this definition of canning, but the vegetable is preserved either by the use of a large quantity of salt, or by the aid of tartaric acid, which must either be removed by soaking, or neutralized by the use of soda before the corn can be eaten. We were aware of these, and other processes for preserving this and other vegetables, but we do not regard these as *canning* in the proper sense of the word; still, we thank those who have written on the subject.

To Get Rid of Stumps.—"J. D. G.," Meadville, Pa. The plan proposed to destroy stumps, viz., by boring a hole 8 inches deep in the center, and putting saltpeter into the hole, leaving them during the winter, and burning them in the spring, will be found delusive. The saltpeter will not wholly saturate the stumps, and thus they will not be sufficiently combustible to burn out top and root together. But if several holes were bored downwards around the stump, and these filled with the saltpeter now, and the stump be left until a dry time next summer, there would be a greater probability of the success of the plan.

A Cheap Windmill.—"D. H.," Chicago. A plan for making a cheap windmill was given in the *American Agriculturist*, for May, 1872. But when the time taken in making it, and the cost of the materials and gearing needed, are figured up, they will be found to amount to about as much as a good windmill made by any of the respectable manufactures. Now that the competition in making machinery has become so active, and the methods of manufacture so effective, it is seldom economical to make machines for one's self.

A Repudiated Bargain.—"J. L. M.," Van Buren, Pa. If two persons sign an agreement in duplicate, each keeping a copy, and no witness was present at the signing, the agreement is nevertheless binding, and can be enforced by law. If one of the parties denies the agreement and his signature in court, it will only be necessary to prove it by some witness who is acquainted with the handwriting.

Methods of Estimating Weights of Cattle at New York.—"F. A. N.," Jefferson City, Mo. The mode of selling cattle at New York is both absurd and inconvenient. Animals are sold at so much a pound, estimated dressed weight. The dressed weight is estimated and agreed upon by buyer and seller, at so much per 100 pounds. For instance, a beast of 1,200 pounds is sold at 10½ cents per lb. dressed weight, estimated at 57 lb. per 100; the buyer, therefore, pays for 684 pounds of beef at 10½ cents per lb., or not quite 6 cents per lb., live weight. The system in vogue in Chicago and St. Louis, viz., selling by actual live weight on the scales, is far preferable.

Swelling of the Udder.—"J. N.," Potts, Va. Swelling of the udder, or *mammitis*, or garget, is sometimes caused by rheumatism, and is not always an immediate effect of inflammation, caused by parturition. It sometimes results from cold taken by the cow lying in a wet field, or upon cold, damp ground. It is always accompanied by fever, or by a chill, during which the animal shivers and trembles. The proper treatment consists of removing the fever by a dose of salts, and afterwasds giving saltpeter (nitrate of potash) in half-ounce doses, twice in one day. If there is a chill, the animal should be well rubbed with woolen cloths, made hot, and then wrapped in some hot blankets. A brisk purgative should be given, and the udder fomented with hot water for two or three hours. The milk should be drawn by a milk tube, and to facilitate this, a weak solution of soda should be injected by means of a syringe.

When to Use Ashes.—"W. E. T.," Allegan Co., Mich. It would not be advisable to use ashes now on land to be planted with spring crops. Ashes are rapidly effective, and should be sown broadcast on the harrowed ground, just before the crop, whether corn or potatoes, is planted.

House for 100 Tons of Ice.—"C. M.," Randolph, N. Y. An ice-house to supply 100 tons should be able to hold a mass of ice 25 feet square, and 12 feet high. This would be about 7,500 cubic feet, equal to 150 tons; but allowance must be made for waste, even in the best constructed houses. The principle on which ice-houses are made was fully described in the November *American Agriculturist*. This is the same for large or small houses. A large house will need to be made stronger throughout than a small one.

A Farm Mill.—"J. C. B.," Charleston, Ill. The Big Giant feed and meal mill, made by J. A. Field & Co., of St. Louis, Mo., is worked by one, two, or four horses, according to the size. The two-horse mill grinds 10 to 20 bushels of ears per hour, or an equivalent of shelled corn. Shelled corn can be ground fine enough for family use, and, if desired, the whole ear, corn-cob and husk, can be ground together into meal fine enough for feed. This mill is worked directly by a lever, is made of steel, and is self-sharpening.

Surfeit.—"J. H. B.," Barnstable, Co., Mass. When a horse has been worked hard, and by some reason, perhaps, a chill when warm, or by drinking cold water, the perspiration is stopped, the skin becomes congested, and often appears covered with small swellings or lumps. This is known as surfeit. It may generally be relieved by a purgative—for example, a pint of linseed oil, followed by a diuretic, as half an ounce of saltpeter, given twice daily, for a few days.

Value of Marl.—"G. W. H.," Newburg, N. Y. The value of marl differs slightly, according to its chemical character. Generally, it is nearly pure carbonate of lime, mixed with some silica. It is then worth very little, not more than 50 cents a load, as a fertilizer. When there is some phosphoric acid in it, it may be worth a dollar a load. Occasionally, there is one or two per cent of phosphoric acid contained in the shell marls. The green-sand marl of New Jersey is quite different in its composition and value from the ordinary shell marls.

Shipment of Meat from Australia.—We learn from the Sydney papers that the anticipated shipment of meat in refrigerators, from Australia to England, will hardly take place. After very costly preparation, and a delay of over two months waiting for alterations in the defective machinery, the vessel sailed without the meat, and the experiment is put off until its return.

Time Required for Homesteading.—"O. P.," Monroe Co., N. Y. Five years residence is required to secure 80 acres of government land, under the Homestead act. The cost of survey, and fees to be paid, amount to $14. Land that we know of may be taken under this act in Reno Co., Kansas, not far from the town of Hutchinson, and, doubtless, in other localities that we do not now know of.

Pipe for Water.—"R. F. W.," Chester Co., Pa. There would be no difficulty in running water 160 feet with 6 feet fall through a one-inch pipe, or even a ⅜-inch pipe. The tin-lined iron pipe, made by the Nason Manufacturing Company, Beekman Street, N. Y., is to be preferred before lead pipe.

To Hang a Transparency.—"Subscriber," in reference to the transparency figured last month, on page 432, asks how to attach the ring by which to hang it. A small piece of tape is put through the ring, and an end of the bit of tape, pasted or gummed to each side of the glass before the edging is put on.

Keeping Sweet Potatoes for Seed.

E. Hall, Athens, Ill., who is largely engaged in raising sweet potato plants or sets, sends us his method of preserving the potatoes during winters when the mercury often reaches 20° and 30° below zero. A cellar, or house above ground is used, as most convenient, which has double walls filled in with sawdust or similar material. The bins are made as large as the room will allow, leaving a space of one foot all around the walls. The bins are made *air-tight*, or lined with paper, and set, without bottom, directly upon the ground. All air currents are excluded, as these would so dry the potatoes as to prevent them from growing. The potatoes are stored in the bins the same day they are dug, in a layer six feet deep, for all except the "Bermuda Red," which heats so much in the sweating stage, as to be injured if placed over three-and-a-half feet deep. The sweating stage lasts for three or four weeks, great quantities of water being evaporated, and the house should be well aired if the weather is dry and warm; if not, a fire should be kept burning in the stove or furnace. Sprouting commences at this time, but the rapid shrinking of the potato soon arrests it. When the sweating is over, the bins are covered on top, leaving holes for ventilation, and frequent examination is made to see that no retention of evaporation causes heating and decay. A bin of potatoes six feet deep, will settle 14 inches during the winter, and this shrinking is all the loss we expect; though a few may rot at the sides and top, the mass will be sound from the bottom up. The temperature is not allowed to go below 50°, and it often reaches 70° or 80°.

Bee Notes for December.

BY L. C. ROOT, MOHAWK, N. Y.

Bees during the present month should be left undisturbed. Those placed in winter quarters in-doors must be kept perfectly dark and quiet. The temperature must be kept as near as possible to 45 degrees... An event of much interest to apiarians was the

National Bee-keepers Convention,

which was held in New York City, on Oct. 16th, 17th, and 18th last; the attendance at the meetings, which took place in the Cooper Institute building, was large, and the exhibition of honey, etc., at the Fair of the American Institute very fine, and indicated great improvement in the methods of placing honey on the market.

Officers and next Meeting.

The Convention adjourned to meet in New York on the third Tuesday of Oct., 1878. The officers-elect for the ensuing year are: *President*, J. H. Nellis, of Canajoharie, N. Y.; *Secretary*, T. G. Newman, Chicago, Ill.; *Treasurer*, A. J. King, New York City.

The Views of the Convention,

as to the present condition of bee-culture, and the causes which have led to the great improvement already manifest, were set forth in a paper prepared by the Rev. J. W. Shearer, of which the following is an abstract:

1. MOVABLE COMB HIVES.—The invention of these has placed bee-keeping on the basis of a successful business pursuit. Such hives, adapted to climate, furnish every facility for intelligent management of bees by regulating swarming, guarding against moths, and manipulating both bees and comb.

2. THE HONEY EXTRACTOR.—The invention of this, which empties the honey from the combs by centrifugal force, without injury to the combs, which may be returned to the bees, marks another great step. Thus virgin honey, free from foreign admixture, is obtained.

3. ARTIFICIAL COMB FOUNDATION.—This, made of pure wax, was first successfully used to a large extent this season. Bees receive this artificial comb foundation with readiness as receptacles both for honey and brood.

4. ITALIAN BEES AND QUEENS.—The introduction of Italians, and improved modes of rearing queens, and introducing them to colonies, has greatly improved the value of the honey gatherers, because of the superiority of the Italian bee and the introduction of new blood.

5. AVOIDANCE OF THE STINGS.—Danger from stings is now largely overcome by the simple appliances used for the protection of the person and for subduing the bees, nearly removing one great obstacle to bee-culture.

6. TO CONSUMERS OF HONEY.—Nice white comb is generally admired, but many can not afford the price. It is no better than extracted honey. All comb is wax, which is perfectly indigestible. Extracted honey is the pure liquid honey as it is taken from the combs by the extractor. It is entirely different from what is known as strained honey. Consumers desire ungranulated honey, and dealers will attempt to supply the demand. Almost all pure honey will granulate when exposed for some time to light and cold. Much of the jar honey recommended not to granulate, is a very inferior article, composed largely of glucose or some inferior substance. Granulated honey can be reduced to its liquid state in a few moments by placing the jar in warm water, and remain liquified for some time before again crystalizing.

7. TO PRODUCERS OF HONEY.—By full use of improvements in bee-keeping, the honey crop of America may be indefinitely increased and become a great source of national revenue. None need fear over-production. The home demand and consumption is largely increased whenever people learn to know the superiority of such honey. Dealers in New York have already commenced a large export trade, and they tell us that their only difficulty is in procuring honey in proper shape and quantity to supply the growing demand. Trade demands that they be put up in nice, attractive packages and in small parcels or jars, so as to be readily handled by grocers and consumers. We believe that improvements in bee-keeping, as compared with old methods, are not less than those seen in railroads and steamboats as compared with former modes of travel.

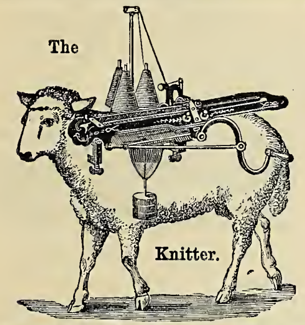
[The above are the essential points presented in this statement of facts, though much abbreviated on account of our crowded columns. ED.]

"Lilliput Land, or Peep-Show for the Young," is a new juvenile, by the editor of "Lilliput Levee." It is full of good things, fine engravings, music, etc. Almost 400 large pages; a most capital holiday book, for the remarkably low price of $1.25. Published by Baker, Pratt & Co., New York.

Citadelle is the name of a pleasing and very neat game, something on the principle of Bagatelle. Parents on the look out for holiday gifts can add this to the home attractions at a moderate expense. It is made by Warner & Co., Northampton, Mass.

Remedy for Scab.—"H. A.," Smith Co., Kansas.—The remedy for scab mentioned—viz.: 7 lbs. each of lime and sulphur boiled together in 60 gallons of water, is one frequently used by shepherds. It is safe, but not so effective as the tobacco dip mentioned in Stewart's "Shepherd's Manual." The lime and sulphur, upon being boiled together, form a new compound (Sulphide of Calcium), which destroys the scab insects when it touches them. To enable it to reach insects in their burrows in the skin, the scabs should be broken up thoroughly.

The Ohio State Horticultural Society, will hold its annual meeting this year at Ravenna, Portage Co., on the 5th–7th of the present month. The meetings of this society are usually full of interest, and all our Ohio horticultural friends should endeavor to be present, but a special welcome will be given to those from other States. M. B. Bateham, Painesville, is Sec'y.



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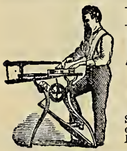

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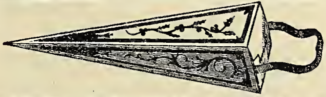

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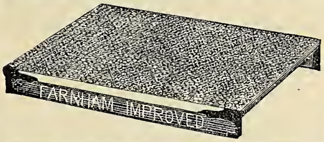

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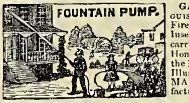
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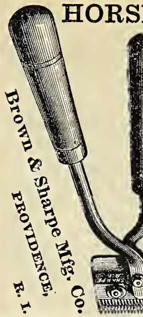

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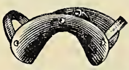

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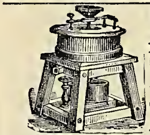

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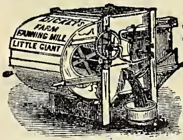

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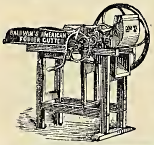

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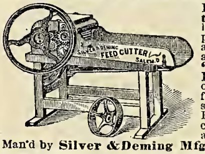

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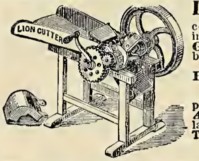

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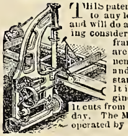

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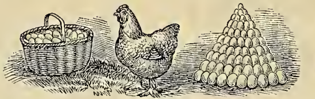
OF
POULTRY.



(Trade Mark.)

LAYING HENS,
YOUNG CHICKS,
DUCKS,
and
TURKEYS.

WILL MAKE HENS LAY,

Winter and Summer, support Fowls during moulting, keep them constantly in fine condition, and increase their profit 100 per cent. Half of the chicks die annually. This makes bone and muscle early, and will save them. Packages to mix with 50 weight ordinary feed, 50 cts.; larger for $1.00 and $2.00. Sent prepaid on receipt of price.

For sale by Druggists, Grocers, and Postmasters. **Local Agents Wanted.**

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American Veterinary Review.

Monthly Journal devoted to Veterinary Science and Veterinary Interest.

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Subscription Price, **$5.00 a year.**

FARMER'S VETERINARY ADVISER,

By PROF. I. LAW, Cornell University, Ithaca, N. Y.

"The best work on the diseases of animals in the English language."—*Country Gentleman.*

Sent by mail from the Author for **$3.**

Hallock's Sportsman's Gazetteer and General Guide.

An Encyclopedia of 900 pages, comprising fullest instruction in Hunting, Fishing, Boating, Training and Diseases of Dogs, Woodcraft, Taxidermy, etc., with a Directory to the principal Game Resorts of North America. By CHARLES HALLOCK, Editor of Forest and Stream and Rod and Gun. Price $3. Published by Forest and Stream Publishing Company, 111 Fulton St., New York. Second edition now ready.

Animal MEAL

[*Patented.*]

FOR FOWLS AND SWINE, made from *Fresh Beef* and *Fresh Bones* dried and ground to a *Sweet Meal,* to which is added a portion of parched grains, making a wholesome, cheap and highly concentrated food, one fourth, fed with three fourths other food, *once a day,* being an ample quantity. The best egg-producing food ever prepared. Keeps well, and fowls or swine eat it with a relish. Extensively used for four years. Trial bags, containing 30 lbs., $1.00. 100-lb. bag, $2.50. Ask your grocer for it. Send for circular with testimonials.

W. H. Bowker & Co., 43 CHATHAM ST., Boston.

☞ Sole Agents for Stockbridge Manures.

WILLIAM CROZIER,

BEACON HILL, Northport, L. I., N. Y.,

Received a Medal and Diploma on his stock at the Centennial Exhibition, Importer and Breeder of Clydesdale Horses, Ayrshire and Jersey Cattle, South-down Sheep, and Improved Berkshire Hogs—and English Dorking Fowls.

For Sale at Fleetwood Stock Farm, near Frankfort, Ky., Thoroughbreds, Trotters, Jersey Cattle, &c. Address J. W. HUNT REYNOLDS.

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Importer and Breeder of Improved Blooded Live Stock, Horses, Cattle, Cotswold and Southdown Sheep, Chester, Berkshire and Yorkshire Pigs, Toulouse, Bremen, Hong Kong, White China and Wild Geese, Cayuga, Rouen, Aylesbury, Pekin and Musk Ducks, Bronze, Blue, Buff and White Turkeys, Dorkings, Brahma, Cochin, Guinea and all other Fowl, Deer, Swans, Peacocks, Pigeons, Eggs, &c., at low prices. Best Breeds of Dogs and Maltese Cats, Rabbits, Ferrets, Guinea Pigs, White Mice, &c. Song Birds of all kinds, and Shetland Ponies. Fine Milch Cows always on hand.

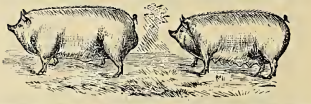
Newfoundland Pups of Centennial First Premium Stock.

POLAND CHINA OR MAGIE HOGS.

L. L. REED, Auburn, Geauga Co., Ohio, Breeder and Shipper of Cotswold Sheep, Magie Hogs, Bronze Turkeys, and all the leading kinds of fancy Poultry. Send for Circular, free.

RUFUS L. COLE, PRODUCE COMMISSION MERCHANT, 141 Reade St., New York. *Established in* 1852. Market reports and shipping directions sent *free* on application.

Lewis' Lancashire Swine.



Imported by the undersigned. These swine have taken first premiums wherever exhibited in England and this country. Awarded the three highest premiums over all competitors at New England Ag'l Fair, held at Portland, Maine, Sept., 1877. White in color, well haired, very hardy, small waste, easily fattened, very prolific, large size, mature early. Send for descriptive circular.

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in **BERKSHIRES, YORKSHIRES, CHESTER WHITES,** and other breeds of all ages. **AYRSHIRE CALVES. FANCY POULTRY. PLYMOUTH ROCKS** a specialty. **BREEDER'S MANUAL,** 16 full-page stock cuts, 25 cts.

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COMPANY OF
D. M. MAGIE, OXFORD, BUTLER CO. OHIO.
ORIGINATOR &
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MAGIE OR POLAND CHINA HOGS
PARTIES WANTING THIS STOCK PURE SHOULD SEND
TO HEADQUARTERS AND ADDRESS ME AS ABOVE.

CHESTER WHITES,

PREMIUM HEADQUARTERS STOCK.

Also, **Improved Yorkshire and Berkshire Pigs,** all ages.—Thoroughbred **Jersey** and **Ayrshire Calves,** "*deep butter and milk strains,*" a specialty.—**Scotch Shepherd** and other **Dogs,** bred and for sale by FRANCIS MORRIS, 311½ Walnut St., Philadelphia.

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FRANK PETTIT, Salem, N. J. Breeder and Shipper of pure Poland China Swine. Send for Circular and Price List before purchasing elsewhere. Large stock on hand.

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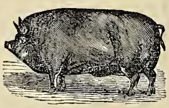
Hall Bros., Ann Arbor, Mich., make a specialty of breeding the finest strains of Essex, Suffolk, Berkshire, and Poland China pigs. *Prices ⅓ off card rates.* Satisfaction guaranteed. A few splendid pigs, gilts, and fine boars now ready.



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The Largest Herd of Pure-bred Essex in the World.

PRICES REDUCED.

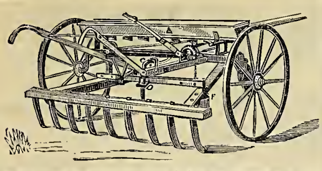
For the next month, or six weeks, I will send pure, well-bred, and very choice Essex pigs, two or three months old, at the following reduced rates:

Boar, $18. Boar and sow, not akin, $35. Boar and two sows, $50. Boar and three sows, $65. Boar and four sows $80. Boar and six sows, or two boars and four sows, $100.

Choice pigs, six to eight months old, at the following low rates: Boar, $25. Boar and sow, not akin, $45. Boar and two sows, $63. Boar and three sows, $80.

I guarantee the safe delivery of the pigs. If desired, only one-third of the money need be paid in advance. Balance C. O. D. For further information address

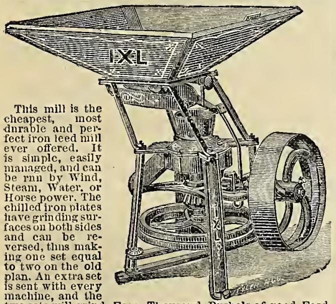
JOSEPH HARRIS,
Moreton Farm. Rochester, N. Y.



Prize Medal and Diploma awarded at the Centennial, and Diploma from the Franklin Institute. Premiums from every State and County where exhibited. Hoes Wheat, Peas, Beans, and Corn, and Corn when drilled in for Dairy purposes. Will hoe one acre of wheat per hour, and every acre hoed will add 5 to 10 bushels per acre more for being hoed, and thereby fully double the net profits, as has been proven by the best practical and model farmers. Has been lately improved for strength and convenience. Can be attached to any 2-wheeled vehicle, or drill, by removing hoes and pivoting to the draft pole. Price on board track for attachment, $30; do., No. 2, much better, $35. No. 1, perfect with wheels, $60. Liberal discount to the trade. Everything warranted sound, and one day's trial in the field, and if not satisfactory, can be returned. Agents wanted. Send for descriptive circulars, containing practical trial and results. Send orders early, that they may be made and reach destination in time for spring use. Address

A. B. TRAVIS, Manufacturer,
Brandon, Oakland Co., Mich.

IXL Feed Mill.



This mill is the cheapest, most durable and perfect iron feed mill ever offered. It is simple, easily managed, and can be run by Wind, Steam, Water, or Horse power. The chilled iron plates have grinding surfaces on both sides and can be reversed, thus making one set equal to two on the old plan. An extra set is sent with every machine, and the two sets will grind Four Thousand Bushels of good Feed. New plates can be had for $1.25 per set. These mills are built wholly of iron, (except the Hopper,) are strong, efficient, and durable Thousands are in use on Stock Farms—every one giving excellent satisfaction. Every farmer should have one and grind his own Feed.

Send for Catalogue and Price List to

U. S. WIND ENGINE & PUMP CO.,
Batavia, Kane Co., Ill.
Manufacturers of Halladay Standard Wind Mills.

Big Giant Corn Mill,

Every Man His Own Miller.

The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

MANUFACTURED BY

J. A. FIELD, SON & CO.,
922 N. 2nd St., St. Louis.

CORN HUSKER.

No cold or sore fingers, if used with gloves or mittens. Can be used without gloves or mittens, if desired. Will last a life time. Taken 6 Premiums. One sample 25 cts.; two for 45 cts.; 5 for $1.00.

CITY NOVELTY CO.,
108 S. 8th St., Philadelphia, Pa.

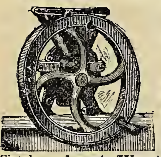
"City Novelty Co. *Morristown, Pa.*, Oct. 10.

Gents:—Please send me 100 Huskers at once. They sell like hot cakes. Was out about 3 hours and took orders for 25 to deliver to-morrow. Please hurry; will send more orders soon. Have tried the husker; they do all you claim. Met one Farmer who had one and wants another, if he has to pay $1.00 for it. J. H. WARNER, Morristown, Pa.

CORN SHELLERS

AND

CORN MILLS,



For Hand or Power use.

Guaranteed the best machines for the money in the market.

Shellers, $5. Mills, $12.

Every farmer should have one. Send for Descriptive Circulars. **Agents Wanted.**

LIVINGSTON & CO., Iron Founders,
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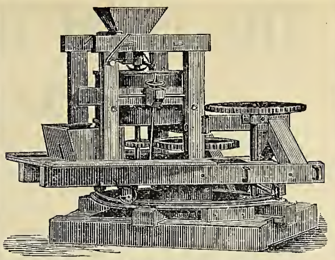
A bright, cheerful appearance of Fowls and Chicks, and abundance of eggs insured by using Imperial Egg Food. See Adv't. page 484.



THE LANCASTER
Portable Grist Mill.

Horse-Power and Grist Mill combined.
Friction avoided—Power & Space economized.
A long felt Want Supplied.
Every Farmer his own Miller.

This mill, with twenty inch stones, worked with two or four horses, will grind from three to five bushels of fine meal or flour per hour. It is simple and durable in construction, and can be easily managed by any farm hand. It occupies no more space than is required by any ordinary horse-power.

Price of the combined Mill and Horse-Power, **$250.**

Circulars with full description sent upon application.

Address C. C. LANCASTER, 66 Broadway, New York, (P. O. Box 3431,) or LANCASTER & LUCKE, Richmond, Va.

Agricultural Implements

FOR FALL AND WINTER USE.

ICE TOOLS, etc.

Address **R. H. ALLEN & CO.,**
189 & 191 Water St.,
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THE COOK EVAPORATOR,
FOR MAKING

CIDER JELLY

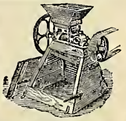
AND

MAPLE SYRUP AND SUGAR.

Reduced Prices.

Blymyer Manufacturing Co., Cincinnati, O.
Steam Engines, Threshers, Bells. *Circulars sent free.*

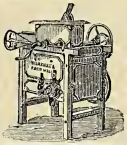
Premium Farm Grist Mill.



Grinding parts are of **Steel**, Grinds all kinds of grain rapidly. Is durable, simple, and cheap. Is suited to all kinds of horse-powers.

Send for descriptive Circular.

WM. L. BOYER & BRO.,
Philadelphia, Pa.,



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Shells and Grinds Six to Fifteen bushels of Corn per hour. Two to four horse power. Send for Circular. Address

St. Joseph Manufacturing Co.,
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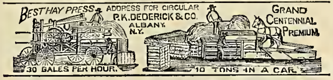
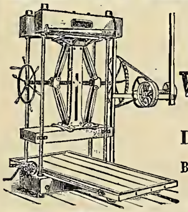
Dodge Hay Press—Automatic Feed.

Puts 10 tons in a common car—Presses a car load a day—Portable as a wagon. Guaranteed. Address

MOHAWK & HUDSON M'F'G CO., Waterford, N. Y.,


BEST HAY PRESS
ADDRESS FOR CIRCULAR
P. K. DEDERICK & CO.
ALBANY, N.Y.
GRAND CENTENNIAL PREMIUM
30 BALES PER HOUR.
10 TONS IN A CAR.

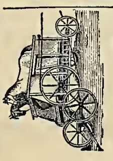


POWER
Cider and Wine Press

WITH

Double Platform.

BOOMER & BOSCHERT
PRESS CO.,
SYRACUSE, N. Y.



IMPORTANT TO

STOCK RAISERS, FEEDERS AND OTHERS,

The J. I. CASE & CO., Racine, Wis.,

TREAD POWER

Will Cut or Grind More Feed than any in use.

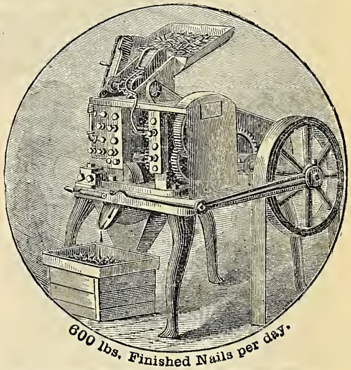
Adapted for Sawing, Elevating, Drilling and Shop Purposes.

☞CATALOGUE SENT FREE.☜

THE
GLOBE NAIL.
THE BEST HORSE SHOE NAIL EVER MADE.

About ten years ago the **GLOBE NAIL COMPANY of Boston,** put on the market the first pointed, polished and finished Horse Shoe Nails ready for driving. Previous to that time all Horse Shoe Nails were pointed, and most of them made, by the shoers in their own shops at the rate of but six pounds per day.

The **Globe Nail** was at once found to be much cheaper and better than any then in use. It soon became so popular that all manufacturers of Horse Shoe Nails were compelled to make their Nails to resemble the Globe. For the last ten years it has been the model. Each year the Nail has been greatly improved in quality, and to such a point have we educated the shoers that now they will hardly use a nail unless it is absolutely perfect.



600 lbs. Finished Nails per day.

At the Centennial Exposition in Philadelphia, we were awarded the Medal and the following report, far stronger than that given upon any other Nail:

INTERNATIONAL EXHIBITION, 1876.
U. S. CENTENNIAL COMMISSION.

[BUREAU OF AWARDS.]

PHILADELPHIA, June 22, 1876.

No. 239, Globe Nail Co., Boston, Mass.:

Horse Shoe Nails, Pointed, Polished and Finished. The uniformity in size, smoothness of finish, hardness and tenacity of the iron, closeness of fibre, and excellence of the head and point, the tensile strength of body, and riveting properties of these Nails, unite in making them of the very highest class of manufacture.

Recommended for an Award of Merit.

DANIEL STEINMETZ, Phila., Chairman,
J. D. IMBODEN, Richmond, Va.,
CHARLES STAPLES, Portland, Me.,
G. L. REED, Clearfield, Pa.,
DAV. McHARDY, Aberdeen, Scotland,
T. DIEFENBACH, Germany,
Group Judges XV.

We annex a sample of the testimonials we receive daily from all parts of the country:

ST. LOUIS, MO., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.

Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the Globe Nail, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals,—horses in particular,—I desire to say a few words in favor of **The Globe Nail.** Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the Globe Nail in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say **it has no superior in point of Toughness, Shape, and Finish, if it has any equal.** I have used about fifteen hundred pounds of Globe Nails a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing nails a few cents a pound cheaper, we would have fewer lame horses. **I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat!** I am willing to pay, without any suit, for all horses that are lamed in my shop by using the Globe Nail. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,
(Signed.) P. H. O'NEILL.
Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary. P. H. O'N.

The best Horse is sure to win. SO CLEAR THE TRACK FOR THE

GLOBE NAIL CO.

BUCHAN'S CARBOLIC MEDICINAL SOAP.

The Healing, Purifying, and Disinfecting properties of Carbolic Acid are among the most wonderful facts disclosed by modern science. The best, safest, and most convenient method of using this wonderful Curative is in the form of Soaps.

This Soap is highly prized by physicians and nurses for the sick-room. It purifies and disinfects all unpleasant and dangerous odors, prevents the spread of contagion, and is invaluable in curing sores, eruptions, and all cutaneous diseases.

Buchan's Carbolic Medicinal Soap is for sale at all Druggists.

WHOLESALE DEPOT,
KIDDER & LAIRD, 83 John St., New York.

THE MAYNARD

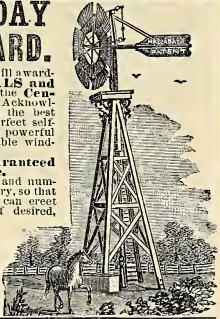
RIFLES AND SHOT GUNS,

CREEDMOOR, MID-RANGE, SPORTING and HUNTING.

The Best Gun for all purposes ever manufactured. For full description, with price list, address

MASS. ARMS. CO., Chicopee Falls, Mass.

HALLADAY STANDARD.

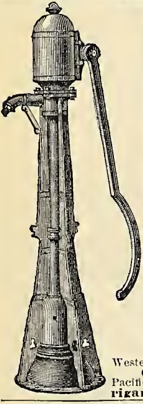


The **only** wind-mill awarded **TWO MEDALS and DIPLOMAS** by the **Centennial Judges.** Acknowledged by all to be the best made, the most perfect self-regulator, the most powerful and the most durable wind-mill known.

Every Mill Guaranteed as above.

Each piece fitted and numbered at the Factory, so that farmers and others can erect their own mills if desired, using our drawings and instructions for a guide. *Send for Illustrated Catalogue & Price List.*

U. S. WIND ENGINE & PUMP CO.
BATAVIA, KANE CO., ILL.



W. S. BLUNT'S UNIVERSAL FORCE PUMPS.

Secured by letters patent.

These pumps have enormous power, and are for the house or for **out-door wells** of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

Send for circulars to
NASON M'F'G CO.,
71 Fulton and 71 Beekman St. New York.
Western Agency, **Newton & Hale, Chicago.**
Pacific Coast Agency, **Dunham, Carrigan & Co., San Francisco, Cal.**

THE DRIVEN WELL.

TOWN and COUNTY privileges for making **Driven Wells** and selling Licenses under the established **American Driven Well Patent,** leased by the year to responsible parties, by

WM. D. ANDREWS & BRO.,
NEW YORK.

250 MARYLAND FARMS, in Tracts from 30 to 300 acres.

Near railroad and navigable Salt-water (with all its luxuries), in Talbot Co., Md. Climate mild and healthy. Titles good. New Pamphlet and Map showing *location*, free.

Address C. E. SHANAHAN, Atty., Easton, Md.

THE CHRISTIAN ADVOCATE.

1878.

Reasons why it should circulate largely in Christian Families:

1. **It is a religious paper.** It has convictions, and dares to state them. It has a creed, just as every honest man has a skeleton. It has a depth of experience and breadth of charity to cover its creed.
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3. **Its Editorials are widely read, and frequently quoted.** They strike the great questions that agitate the public mind, and by a bold, independent, prompt, and matured policy, hold the very first rank in molding public opinion.
4. **Its literary work is of a high order.** Its Book Notices, epitomizing and criticising, are unsurpassed.
5. **Its Contributed Articles** are the product of the best minds. The first page of any number is worth more than the subscription price for a year.
6. **Its Church News is abundant from all parts of the world.**
7. **Its General News,** now equal to that of any of the religious weeklies, with more space next year, will supersede the need of any other weekly newspaper.
8. **Its Sunday-School Helps are extensively quoted in other papers.**
9. **Its Science and Art Department,** for which arrangements have been made, will not be surpassed by any other weekly.
10. **Its Educational Department** is as rich as the educational interests of the country.
11. **Its Health Department** ranks well, even among medical journals.

NEW DEPARTURES.

1. **Rev. Joseph Cook's Popular Boston Monday Lectures,** (thirty in all,) will be published under copyright, in full, with the author's corrections. It is a grand treat to see Cook handle the scientists. Each lecture is worth more than the cost of a year's subscription.
2. **An Agricultural Department.** As a substitute for this Department in the paper, we have made a special arrangement with the ORANGE JUDD COMPANY, by which we can offer **The American Agriculturist,** acknowledged to be the best agricultural and horticultural publication in the world, on easy terms in connection with *The Christian Advocate*. Any subscriber, who wishes both the *Advocate* and the *American Agriculturist* can have *both* of them from the reception of their subscription till the *end of* 1878, for $3.75, which furnishes the *American Agriculturist* to *all* desiring it for less money than is required to secure it in any other way. This Journal, illustrated with from 600 to 700 original engravings in each volume, and full of practical suggestions, interesting to *Farmers, Gardeners, Fruit-Growers, Stock-Raisers, Owners of Small Plots,* or *Lots* in *Country, Village,* and *City,* will give to our readers much valuable information to be found nowhere else.
3. **The Leader and his Class.** A Department that will consist chiefly of original contributions.
4. **The Children's Club.** Something for each one.
5. **Eclectic Literature.** Selections from the Foreign and Home Magazines in each number will enable *The Christian Advocate* to do the work of an Eclectic Magazine.

PREMIUMS.

I. An elegant steel engraving, on paper 21x29½ inches, painted by that eminent artist, S. J. Guy, N. A., and engraved by A. H. Ritchie, N. A., the prince of steel engravers, will be given to every subscriber, old and new. It is a companion-piece to "Mercy at the Wicket Gate," and is pronounced by the best of judges superior to any premium heretofore offered by any paper to individual subscribers. No publisher of an equally large, good, and original steel engraving could afford to put it on the market, in the ordinary way, at a retail price of less than FIVE DOLLARS. We can give to each *Advocate* subscriber an original engraving of such size, artistic beauty, and permanent value, only because the greatest item of expense, the original cost of the steel-plate, is divided into *over fifty-three thousand* parts, bringing the actual cost to us of the premium to each subscriber within our reach.

II. 1. We will give to every agent who shall have increased within his charge the list of subscribers for 1878 over the list within that charge for 1877, by *three*, at full price, $2.70 each, including postage,* or who shall have secured *three* such subscribers within a charge where we have none for 1877, *Phillips Brooks' Yale Lectures on Preaching*, recently published by Dutton & Co., and also *Lectures* delivered at Yale College last month by Rev. Dr. Dale, of Birmingham, England, just announced by A. S. Barnes & Co. Retail price of the two volumes, $3.

2. For an increase, as above stated, of *five* subscribers, we will give *Webster's Unabridged Quarto Pictorial Dictionary*, new edition. Publishers' retail price, $12.

3. For an increase, as above stated, of *ten* subscribers, we will give *The Webster's Unabridged Dictionary, and Clarke's Commentary on the New Testament*, ($8.) Aggregate retail prices, $20.

4. For an increase, as above stated, of *fifteen* subscribers, we will give *The Webster's Unabridged Dictionary, Fletcher's Works*, ($10), and *Bishop Haven's Mexico*, ($5). Aggregate retail prices, $27.

5. For an increase, as stated above, of *twenty* subscribers, we will give *The Webster's Unabridged Dictionary, Clarke's Commentary*, complete, six vols., ($24). Aggregate retail prices, $36.

6. For an increase, as above stated, of *twenty-seven* subscribers, we will give *The Webster's Unabridged Dictionary, and Chambers' Cyclopædia, English Edition*, ten vols., ($30). Aggregate retail prices, $42.

The Dictionary and other premium books will be delivered at 805 Broadway, N. Y., to agents entitled to receive them, at any time on the payments of the amounts of their subscription list.

Sample copies of *The Christian Advocate*, to aid in canvassing, will be furnished without charge; also a copy of the *American Agriculturist*, to agents who will canvass for it in connection with *The Christian Advocate*. Price, post-paid, *The Christian Advocate*, $2.70. *The Christian Advocate* and *American Agriculturist* together, post-paid, $3.75.

To all our agents we say, Secure the Dictionary, and as many as possible of the other premium books. If you don't want them for yourselves or your children, you can readily dispose of them.

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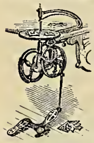

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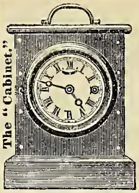
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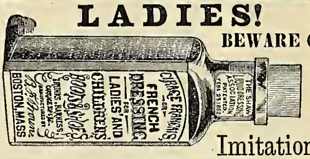

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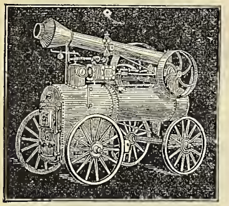

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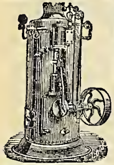

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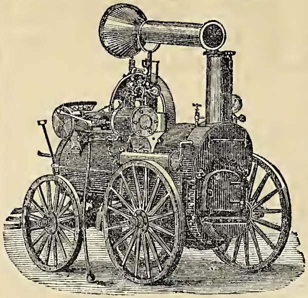

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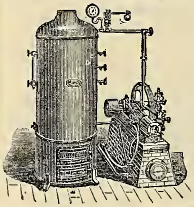

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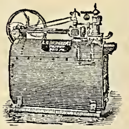

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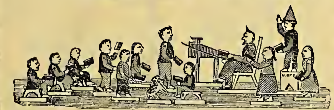

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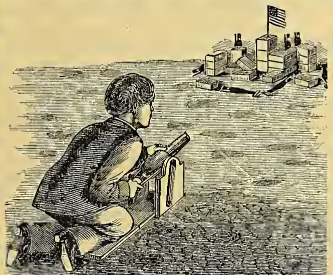

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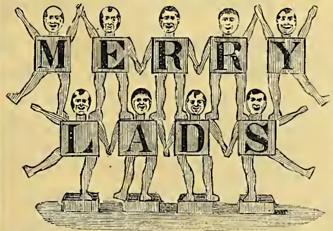

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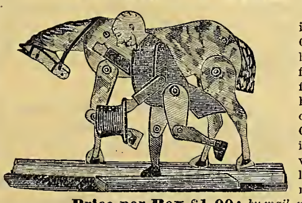

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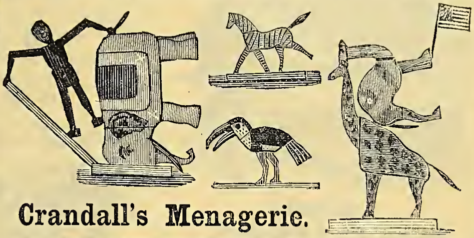

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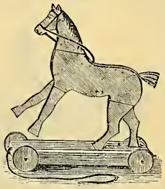

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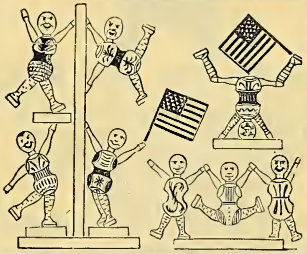

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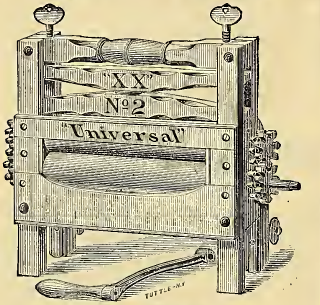

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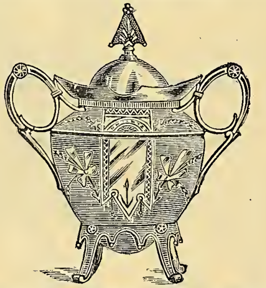

First-Class Table Silver Ware.

We take pleasure in offering the readers of the *American Agriculturist* a full line of the **VERY FINEST QUALITY AND HIGHEST GRADE** of

ELECTRO-PLATED SILVER WARE.

Tea Sets, Tea Trays, Coffee and Tea Urns, Water Pitchers, Water Coolers, Butter Dishes, Cake Baskets, Castors, and all other kinds of Hollow ware. Butter, Cake, Fish, and Pie Knives. Berry, Pickle, and Preserve Dishes.

OUR SOLID STEEL SILVER-PLATED TABLE KNIVES, are by far the most economical and serviceable goods in the market.

OUR FORKS AND SPOONS, we make a specialty of, and they are, as our trade mark says of all our goods, "Not XLD."

Every article is warranted of the finest quality and finish, and may be found at all leading Jewelry or House Furnishing Stores. Be sure and get the "Wallingford Ware" of

SIMPSON, HALL, MILLER & CO.,
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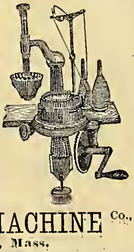
TUTTLE

The Latest and Best

KNITTER

For Family Use

In the Market.



For Circular, Sample, and Full Particulars, Address

LAMB KNITTING MACHINE Co.,
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100 per cent increase in eggs you will get, by using the Imperial Egg Food.

TEAS

This is a combination of capitalists to supply *consumers only* throughout the *United States* with **PURE TEAS** at prices never before known, on the mutual principle, by getting up clubs. Send for New Price-List.

CONSUMERS' IMPORTING TEA CO.,
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A FARM AND HOME OF YOUR OWN!

NOW IS THE TIME TO SECURE IT!
ONLY FIVE DOLLARS, FOR AN ACRE

Of the Best Land in America. 2,000,000 Acres in Eastern Nebraska,

NOW FOR SALE.

Ten Years Credit Given, Interest only 6 Per Cent.

Full information sent free, address,

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Every Farmer and Business Man

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☞ Apply to any agent, or write to the Company, at Hartford, Conn. **Agents everywhere.**

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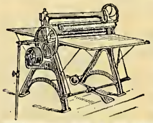

Guaranteed to perfectly perform all work, either hand or power. Cold or Steam Heated Rolls cheap, durable, highly recommended.

For circulars apply to
STANDARD LAUNDRY MACHINERY CO., 32 Dey St., New York. 58 Long Wharf, Boston.

THE HARVEST OF 1878.

For description of **A Wonderful Improvement in Harvesting Machinery,** see page 400, October number *American Agriculturist.* For further information address Whiteley, Fassler & Kelly; Champion Machine Co., and Warder, Mitchell & Co., of Springfield, O., and The Toronto Reaper and Mower Co., Toronto, Canada.

OTIS BROTHERS & CO.,
348 BROADWAY, NEW YORK,
SOLE EXPORT AGENTS
FOR THE

New Champion Mower,

(FORMERLY KNOWN AS WHITELEY'S CHAMPION HAYMAKER.)

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Take it Easy.

Common-Sense Chairs and Rockers.

My Reading and Writing-Table is separate from chair, and is secured in position by a strong button. Is easily adjusted to nearly all kinds of armchairs, but should be used on my No. 4, 5, or 13, to give *complete* satisfaction. Table can be set at any angle desired, or lowered to good position for writing. Makes a nice table for an invalid. Cutting-board for the ladies. None of your little 7x9 affairs; but is 16x32 inches. Cannot be got out of order.

If Dealers don't keep my Chairs and tell you they have others just as good, *don't believe them.*

See that my name is stamped on chair before purchasing.

Nothing better or more suitable for

HOLIDAY GIFTS.

For sale by the trade. Manufactured by

F. A. SINCLAIR, Mottville, N. Y.

Send stamp for Illustrated Price-List.

Sole Manufacturer of

WHEEL CHAIRS

ONLY. ALL Styles and Sizes.
For Invalids and Cripples.

Easily propelled, in or out-doors, by *any* one having the use of hands. Send stamp for Illustrated Catalogue and prices of different styles. Designer and manuf. of the "Rolling Chairs" used at the Centennial. **HERBERT S. SMITH, 32 Platt St., New York.**

Please mention this paper.

Good Times

FOR

BOYS and GIRLS.

CRANDALL'S BUILDING-BLOCKS.

Can be made into forms of almost endless variety.

The blocks are put up in neat, strong boxes, and a large sheet giving various designs of buildings, etc., accompanies each box.

Price—No. 1, $1.50; *by mail, prepaid,* **$1.80.**
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Making 300 different and beautiful Combinations of Pictures, which are in very brilliant colors. They are not injured by washing, do not wear out, and afford endless amusement.

Price 75 Cts.; *by mail, prepaid,* **90 Cts.**

CRANDALL'S EXPRESSION-BLOCKS.

With Letters on one side, Picture on the other. The Alphabet is the key to the picture which, when complete, represents the inventor in Dream Land. These Blocks are water-proof, and can be washed if soiled.

Price 50 Cts.; *by mail, prepaid,* **65 Cts.**

CRANDALL'S ILLUMINATED PICTORIAL ALPHABET CUBES.

These Cubes are gorgeously colored, and will make over 500 beautiful combinations or figures. They are water-proof, odorless, and durable; put up in handsome black walnut boxes; and are most attractive to both young and old—an elegant present for the little ones.

Price $2.50; *by mail, prepaid,* **$2.80.**

CRANDALL'S IMPROVED GYMNASTS.

Two jolly little fellows, attached to opposite ends of two bars, are made to perform the most laughter-provoking antics, and to throw themselves into the most unaccountable positions, by gently working the foot of the wooden frame through which the bars revolve. It is a low-priced toy, made on the principle of the "Little All-right," and like that one of Crandall's latest. It is not conveniently sent by mail, but for sale by most Toy-Dealers.

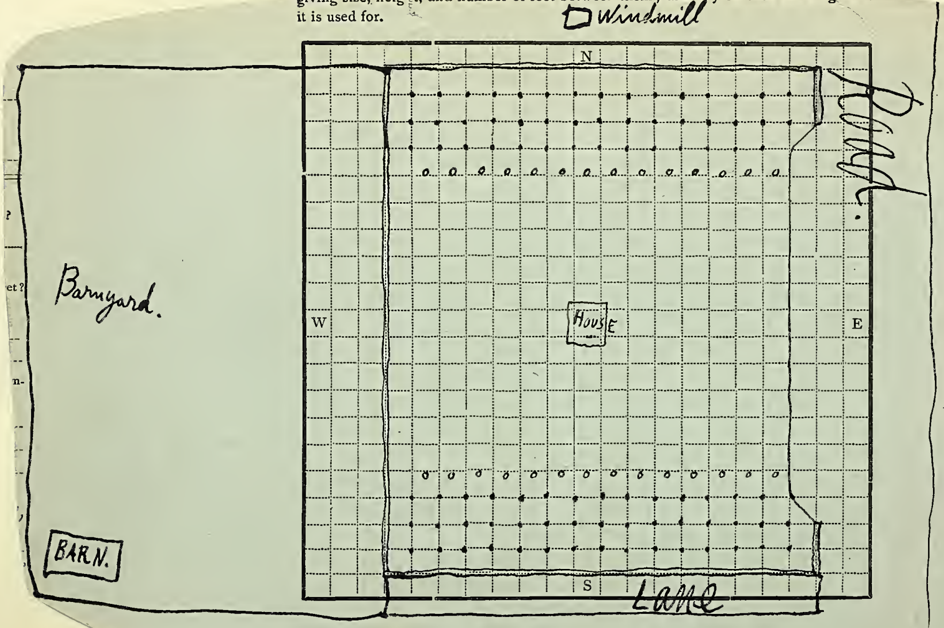
[SEE ALSO THIRD COVER PAGE.]

N.B.—*If postage is not remitted with the prices, as above, the blocks will be sent by express at purchaser's expense.*

Orders from the trade will be supplied on liberal terms.

ORANGE JUDD COMPANY,
245 BROADWAY, NEW YORK.

giving size, height, and number of feet between them; and say on each building what it is used for.



Dr. Fosdick, Williams, Mich.

			while ther
----	----------	----------	On Reaper and Mower while therein.
8----)	----------	----------	On Wagons and Buggies, Carriages, Harness, Robes and Sa dles while therein or under cover on Farm.
	----------	----------	On----------
	----------	----------	On----------
	----------	----------	On----------roof---------- **Barn No. 2** [Material.] [Material.] (--------ft. x--------ft., built in 18----) with Shed attached and including foundation.
or in Cellar.	----------	----------	On----------while therein.
while therein	----------	----------	On---------- roof---------- **Granary** [Material.] [Material.] ----------ft. x----------ft., built in 18----)
hile therein.			
while therein.	----------	----------	On Corn Crib.
arn No. 1	----------	----------	On Grain therein.
	----------	----------	On----------
hed attached,	----------	----------	On ----------
	----------	----------	On Grain in Stacks on Farm.
	----------	----------	On Hay in Stacks, on cultivated field only, on Farm herein described (Hay on marsh land not insured).

$100 on any one animal, while in Barn or on Farm, and against Lightning while on or off premises, in use or

one animal, while in Barn or on Farm, and against Lightning while on or off premises.

----------on Sheep on Farm herein described. **Total Amount, $**----------

----------	No. Sec----------No. Twp----------No. Range----------
----------	Village of ----------Lot----------Block----------
----------feet	5. **Title**—Have you fee simple title?----------If not, what kind of a title have you?----------
Painted 18----	
----------	6. **Incumbrance**—Is the property incumbered?----------If so, what amount? $----------When due?----------
----------	
----------	Have there been any proceedings for foreclosure?----------
?----------	7. **Other Insurance**—Is there any other insurance?----------Amount, $---------- If other insurance, give written form of policy.
----------	8. **Cash Value**—of land and buildings, $----------No. of acres?----------
----------	How long have you owned the premises?----------
----------	9. **Loss by Fire**—Have you ever had a loss by fire?----------If so, state particulars on back hereof.
----------inches	
----------	10. **Incendiarism**—Have you any fears of incendiarism? ----------
----------	11. **Barn**—Condition?----------**Granary**—Condition?----------
----------	Is it occupied for private Barn only?----------
----------	Distance from occupied Dwelling?----------feet.

me or by my authority, and will be assumed as my act, and the statements are warranted to be a correct description d of all incumbrances.

nt and also Diagram on back of my Application.

----------*App't.*

Name of Mortgagee.

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